The Builder.

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*Mr. Ruskin's "Modern Painters."**

AN author, who lays before us a fifth concluding volume of four hundred pages, of a work which bears throughout, evidence of an amount of labour and thought seldom given to an art subject, at least deserves, at such hands as ours, careful examination and a disposition to appreciate the result. We have, therefore, both carefully read Mr. Ruskin's last volume, and striven to possess ourselves of the meaning and intent of his words. We must say, however, the object is by no means easy of attainment. There is in this volume, as in every work by Mr. Ruskin, much that may instruct as well as delight a certain class of readers,—the more thinking, and we may say conscientious,—of whom our author incidentally laments the paucity or want. But, even for these, the aim or drift of the work, taken to be the exaltation of a particular artist,—whose exhibited pictures and drawings now happen to stand the best evidence of his wonderful, or we will say, as we have long said, quite unequalled power in landscape,—will not excuse a bulk of digressional and episodical *impedimenta*, encumbering the march of an argument; useful though they might be elsewhere, or regarded by themselves. Or, taking the intention to be to inculcate the right perception of nature, and appreciation of what is truly art, there are equally excrescences and inconsistencies in the matter of this book. Perspicuity and precision of style, the latter so much contributing to the former, obviously are what they have been called by the first authorities on language, the first and indispensable requisites to pursuance of a thesis. These essentials, however, Mr. Ruskin does not secure, through having omitted to show plainly the object of so large and varied a work as the "Modern Painters," and through the contradictions and inconsistencies to which he has given utterance. We allow, with our author, that changes must occur in opinions during a period such as that of the seventeen years over which the publication of this work has extended: but what must be the effect on a public, indisposed, as we may think from what our author says, to take any trouble to avoid bewilderment? what the tendencies of that so-called criticism which follows Mr. Ruskin's lead, when views have to be reconciled, like some on the nature and essence of art which we find in this fifth volume, to those, for example, which Mr. Ruskin promulgated at the commencement of a well-remembered pamphlet? In that case Mr. Ruskin, so far as plain words went, seemed to hold that *art* was only imitation, and not to see that mere drawing, or without invention, could not be art. He also did not see, or did not sufficiently show, that there is a certain opposition, or at least distinction, between nature and art, whilst the creative power manifested in works of art is mind—the greatest of all the works of nature. He now not merely gets to see that invention is the essential element of art, but he approves of liberties taken by Turner in giving, as representations of actual scenes, objects arranged in different positions to those in which they were observed. He thus forgets what would seem like a *dictum* of his own, that, whilst there is an aim for true art, there is one also for accurate delineation; or, in other words, that, as in landscape painting and representations of architecture, the aim is both the pictorial and the explanatory. In truth, the proportions of the art element and the delineative, by varying, produce the different gradations of art, and kinds of art-work; and were Turner in one sense the greatest artist that ever lived, landscape works of his which were the result of accurate observation and his power of memory, could hardly be ranked in art with subjects admitting invention prominently in the theme,—however nearly allied, and sometimes practically undistinguishable, the delineative power may be from the power of so-called high art. It is not our purpose to attempt to show what art really is. The difficulty always has been felt, and has been confessed by us on many occasions. We would say, however, with our author, that there is a step gained in showing what a thing is not, and in discovery of an error. Such error we believe there is in his depreciation of particular artists and schools; as, indeed, there is in the tone of criticism both on painting and architecture which is now prevalent. We do not class a Teniers with a Titian,—for the reasons just referred to: but both have their merits; and one of such artists is not to be depreciated for the absence of qualities for which he did not seek, and of which the absence by no means implies negation of art. Mr. Ruskin in his preface, after a long account of his labours during the last four years, to excuse delay in the appearance of this fifth volume, says:—

> "It was long before I got quit of a boy's veneration for Rubens' physical art-power; and the reader will, perhaps, on this ground forgive the strong expressions of admiration for Rubens, which, to my great regret, occur in the first volume.
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> Finding myself, however, engaged seriously in the essay, I went, before writing the second volume, to study in Italy; where the strong reaction from the influence of Rubens threw me at first too far under that of Angelico and Raphael; and, which was the worst harm that came of that Rubens influence, blinded me long to the deepest qualities of Venetian art; which, the reader may see by expressions occurring not only in the second, but even in the third and fourth volumes, I thought, however powerful, yet partly luxurious and sensual, until I was led into the final inquiries above related."

And that we may not do him any injustice by what we have said, we will continue the quotation:—

> "These oscillations of temper, and progressions of discovery, extending over a period of seventeen years, ought not to diminish the reader's confidence in the book. Let him be assured of this, that unless important changes are occurring in his opinions continually, all his life long, not one of those opinions can be on any questionable subject true. All true opinions are living, and show their life by being capable of nourishment; therefore of change. But their change is that of a tree—not of a cloud.
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> In the main aim and principle of the book, there is no variation, from its first syllable to its last. It declares the perfectness and eternal beauty of the work of God; and tests all work of man by concurrence with, or subjection to that."

We have shown that we cannot quite agree with the author in the character here given of his opinions.

We may mention that he had before observed, that the first volume, which was "the expansion of a reply to a magazine article," was not begun because he thought himself "qualified to write a systematic treatise on art;" but because he "at least knew, and knew it to be demonstrable, that Turner was right and true, and that his critics were wrong, false, and base." Elsewhere he says that the work has been written for no object of fame or money, or "for conscience' sake," but "of necessity;" and that by "a little flattery adroitly used," and "the substitution of verbiage generally for investigation" he could have gained greater circulation of the volumes.

> "I saw an injustice done, and tried to remedy it. I heard falsehood taught, and was compelled to deny it. Nothing else was possible to me. I knew not how little or how much might come of the business, or whether I was fit for it; but here was the lie full set in front of me, and there was no way round it, but only over it. So that, as the work changed like a tree, it was also rooted like a tree—not where it would, but where need was; on which, if any fruit grow such as you can like, you are welcome to gather it without thanks; and so far as it is poor or bitter, it will be your justice to refuse it without reviling."

The several parts of the work are divided into chapters, which bear the fanciful headings in which Mr. Ruskin delights, and which have their advantages. In the two first parts he pursues, as in the fourth volume, the minute investigation of the structure or growth of certain forms which are elements of the beautiful in landscape scenery. The fourth volume, of about the same bulk as that before us, related entirely to Mountain Beauty. Two questions, our author says, occurred on arranging his materials preparatory to the production of the fifth volume,—"one in the section on vegetation, respecting the origin of wood; the other in the section on sea, respecting curves of waves; to neither of which, from botanists or mathematicians, any sufficient answer seemed obtainable." Ultimately, knowing "little of ships" and "nothing of blue open water," the section on the sea was unsatisfactory to him: the "mathematical difficulty lay at the beginning of all demonstration of facts;" and he abandoned the proposed section, at least as regarded the present work. He therefore confines the first half, or two parts, of his fifth volume to the "vegetation question" and that of the nature of clouds, or rather as to the production of the forms regarded as objects of beauty. These two parts of the work, and the two following, are illustrated by plates very beautifully engraved as well as drawn, and by woodcuts,—the latter mostly too bold, or coarse, for the purpose of explanation.

The first chapter, entitled "The Earth-Veil," shows that flowers and trees were intended to render service to man, and greatly through their attribute of beauty. The author thinks that the common usage of words by which an ill-taught person is called rustic, and a gentle one urbane, may one day be reversed. In the second chapter, entitled "The Leaf Orders," he divides plants broadly into "Tented Plants," that is those living in encampments on the ground, as lilies, or on surfaces of rock, or stems of other plants; and "Building Plants," or trees, which build or rise above the ground. The Building Plants he divides into "Builders with the Shield," and "Builders with the Sword,"—the former being those with expanded leaves, shielding the young bud; and the latter, or the pines, having sharp leaves in the shape of swords. He proceeds, in the next chapter on "the bud," to examine the *chief mystery of vegetation*, which, so far as respects external form, he says is "among the fair shield-builders." In the next eight chapters he examines with great minuteness every feature of the plant, beginning with the simplest spray or shoot, and showing how the leaves and branches grow, and are influenced one by another, and by such causes as decay and the prevailing winds, to form the future tree. He contrasts the treatment of foliage by Salvator Rosa with that by Turner, Albert Durer, and Veronese; and that of branches by some of the Dutch painters, with the natural form of a branch.

In the chapter entitled "Leaves Motionless," he inquires into reasons of the unfrequent treatment of flowers in detail by the chief masters. He discovers that flowers have no sublimity, and that there is a wide distinction between flower-loving minds and those of the highest order; whilst he observes that in good landscape painting, the breadth of foreground, included, implies a distance of the spectator which prevents seeing flower-detail. But the reason he gives in which just now we are most

* "Modern Painters. Volume V.: Completing the Work; and containing Parts—VI. Of Leaf Beauty,—VII. Of Cloud Beauty,—VIII. Of Ideas of Relation—1, Of Invention Formal,—IX. Of Ideas of Relation—2, Of Invention Spiritual." By John Ruskin, M.A., &c. Imp. 8vo. pp. xvi. 384, including indexes,—"Local," "To Painters and Pictures," and "Topical,"—to the whole work: 37 plates; many cuts. London: Smith, Elder, & Co. 1860.

interested is, that "much of what is best in flowers is inimitable in painting;" and that "a thoroughly good workman feels the feebleness of his means when he matches them fairly with nature, and gives up the attempt frankly,—painting the rose dull red, rather than trying to rival its flush in sunshine." How different is this from the naught-rejecting, non-selecting course, once distinctly named, and which, therefore, it is Mr. Ruskin's fault if he was deemed to recommend exclusively. That the aim in this particular, whatever merits (and these are great) are to be found in their works,—has been mistaken by the artists lately called Pre-Raphaelites, would seem to be admitted by Mr. Ruskin himself in the following passage, as also in one of the main divisions of his volume. He says:—

"Some beautiful things have been done lately, and more beautiful are likely to be done, by our younger painters, in representing blossoms of the orchard and the field in mass and extent. I have had something to do with the encouragement of this impulse; and truly, if pictures are to be essentially imitative rather than inventive, it is better to spend care in painting hyacinths than dead leaves, and roses rather than stubble. Such work, however, as I stated in my first essay on this subject, in the year 1851,* can only connect itself with the great schools by becoming inventive instead of copyist; and for the most part, I believe these young painters would do well to remember that the best beauty of flowers being wholly inimitable, and their sweetest service unrenderable by art, the picture involves some approach to an unsatisfying mockery, in the cold imagery of what Nature has given to be breathed with the profuse winds of spring, and touched by the happy footsteps of youth."

We do not think, however, that he insisted on invention with the same clearness as in the present work. On the other hand, he seeks to show a range of conception in Turner's pictures which is scarcely of the nature of landscape art. The exposition by our author, of the relation of tributary lines and forms to the effect of a picture, may be correct,—though we should like to know how much is the necessary result from *perspective:* but the effort, to discover a profound *motive* in the work, which involves so much elaboration of words, often suggests the previous question, whether Turner had a *motive* other than the directly obvious one, or any requiring the ingenuity expended by Mr. Ruskin on the search. The sixth part concludes with the following eloquent words on the mosses:—

"And, as the earth's first mercy, so they are its last gift to us. When all other service is vain, from plant and tree, the soft mosses and gray lichen take up their watch by the headstone. The woods, the blossoms, the gift-bearing grasses, have done their parts for a time, but these do service for ever. Trees for the builder's yard, flowers for the bride's chamber, corn for the granary, moss for the grave.

Yet as in one sense the humblest, in another they are the most honoured of the earth-children. Unfading as motionless, the worm frets them not, and the autumn wastes not. Strong in lowliness, they neither blanch in heat nor pine in frost. To them, slow-fingered, constant-hearted, is entrusted the weaving of the dark, eternal, tapestries of the hills; to them, slow-pencilled, iris-dyed, the tender framing of their endless imagery. Sharing the stillness of the unimpassioned rock, they share also its endurance; and while the winds of departing spring scatter the white hawthorn-blossom like drifted snow, and summer dims on the parched meadow the drooping of its cowslip-gold,—far above, among the mountains, the silver lichen-spots rest, star-like, on the stone; and the gathering orange-stain upon the edge of yonder western peak reflects the sunsets of a thousand years."

Part VII. treats of the various effects of clouds, under the heads,—"The Cloud-Balancings," "The Cloud-Flocks," "The Cloud-Chariots," and "The Angel of the Sea." The author shows how little is known to men of science of the nature of the clouds, and of the causes of their changes of form; but these chapters may be studied with advantage for information on the perspective representation of clouds. In the last chapter, under the fanciful designation given, effects of rain-cloud are spoken of. English wet weather, the author says, is "indeed, one of the things which we should desire to see Art give perpetuity to." And he ranges the climates or lands of the globe under five heads with respect to their fitness for art, or thus shortly worded:—

Wood-lands..	Shrewd intellect..	No art.
Sand-lands ..	High intellect	Religious art.
Vine-lands ..	Highest intellect .	Perfect art.
Field-lands ..	High intellect	Material art.
Moss-lands ..	Shrewd intellect..	No art.

In the course of this chapter, a reference to the mowing-machine brings the assertion that this, "in common with all other inventions of the kind," is likely to "bring more evil upon men than ever the Medusa cloud did, and turn them more effectually into stone." And he adds in a note:—

"I do not say this carelessly, nor because machines throw the labouring man 'out of work.' The labouring man will always have more work than he wants. I speak thus because the use of such machinery involves the destruction of all pleasures in rural labour; and I doubt not, in that destruction, the essential deterioration of the national mind."

He reasserts this error, and at greater length, in a later part of the work.

In Part VIII. the author reaches the most important section of his subject. In the first division of his work, it had been seen how far art might be, and had been, consistent with physical or material facts; in the second division, how far obedient to the laws of physical beauty; and in the last division he has to consider the "relations of art to God and man," "to inquire into the various powers, conditions, and aims of mind involved in the conception or creation of pictures; in the choice of subject, and the mode and order of its history; —the choice of forms and the modes of their arrangement." This whole inquiry then falls into two main divisions, namely, expressional or spiritual invention, and material or formal invention,—the former being concerned with choice and arrangement of incidents, and the latter with arrangement of lines, forms, and colours, so as to produce the best possible effect. "Well-composed," as applied to a picture, he says, does not mean composed according to rule, but precisely the contrary, —composed as no other picture is, or can be again. Yet there are certain elementary laws traceable. It is necessary first to understand what composition is. "Composition may be best defined as the help of everything in the picture by everything else." He therefore gives the first chapter to what he calls "the law of help." In the course of this chapter it is, that he speaks best on the element invention. Invention is "not only the highest quality of art, but is simply the most wonderful act or power of humanity. It is preeminently the deed of human creation; ποίησις, otherwise poetry." Afterwards he shows that to "create" not only *can* be said of man's labour, but must be said continually. To create anything "in reality is to put life into it." A poet, or creator, is not a person who puts things together, as a watchmaker steel, or a shoemaker leather.

"His work is essentially this: it is the gathering and arranging of material by imagination, so as to have in it at last the harmony or helpfulness of life, and the passion or emotion of life. Mere fitting and adjustment of material is nothing; that is watchmaking. But helpful and passionate harmony, essential choral harmony, so called from the Greek word 'rejoicing,'* is the harmony of Apollo and the Muses; the word Muse and Mother being derived from the same root, meaning 'passionate seeking,' or love, of which the issue is passionate finding, or sacred INVENTION. For which reason I could not bear to use any baser word than this of invention."

In the next chapter,—"The Task of the Least," he endeavours to show how the minutest portion of a great composition is helpful to the whole. A great composition "always has a leading emotional purpose," to which its lines and forms have relation. "Undulating lines" are "expressive of action," and "horizontal and angular lines" of "rest and strength." He proceeds to examine in detail certain subjects of opposite characters, noting the smallest details as introduced with purpose. We have alluded to this above. In the third chapter,—"The Rule of the Greatest,"—he says:—"Greatness can only be rightly estimated when minuteness is justly reverenced. Greatness is the aggregation of minuteness; nor can its sublimity be felt truthfully by any mind unaccustomed to the affectionate watching of what is least." But this affection must be accompanied by comparison and reflection. The following, in which the italics are ours, like many other passages, indicates an advance from what the author wrote some time back.

"Here I will only state in conclusion what it is chiefly important for all students to be convinced of, that all the technical qualities by which greatness of treatment is known, such as reserve in colour, tranquillity and largeness of line, and *refusal of unnecessary objects of interest*, are, when they are real, the exponents of an habitually noble temper of mind, never the observances of a precept supposed to be useful."

In the fourth chapter, he treats "the law of perfectness." Perfectness, properly, he says, means harmony, not carrying the work up to any constant and established degree of finish, but to a degree determined upon. All great work is to be called complete according as it fulfils the conditions which were chosen at first. The *sketches* of true painters may be classed as—1. *Experimental*, which by the greatest men are hardly ever made. 2. *Determinant*, to fasten down an idea. And, 3. *Commemorative*, being records of facts. The sketch made as a memorandum may, unless the exact purpose be understood, be as unintelligible as shorthand. Such, he says, were some of Turner's memoranda: others were *both* commemorative and determinant. We will merely mention the sketch of Lausanne, altered in the chief features from the reality, whilst made; because it illustrates some of the remarks we have offered. Mr. Ruskin says a picture may be painted almost any way, as by beginning at one corner and finishing, provided it have been rightly conceived.

The last part,—"Of Invention Spiritual,"—contains some of the best writing, and also some of what we must consider the most fallacious, in the book. Object, however, as one may, the book is full of beauties, full of value. Parts are indeterminate and obscure in motive, filling the mind with a poetic mist, so to speak, very charming and enjoyable, but out of which the striving cultivator must condense his own drops of useful rain if he would have it; while other portions contain teaching with the correctness of which we may be unable to agree: nevertheless the whole exhibits so much thought, inducing thought, and so much heart, inducing earnestness, as materially to increase our obligation to the author.

* "*Pre-Raphaelitism*—p. 28, and the note at p. 27; compare p. 63. The essay contains some important notes on Turner's work, which, therefore, I do not repeat in this volume."

* Χορούς τε ὠνομακέναι παρὰ τῆς χαρᾶς ἐμφυτον ὄνομα.—(*De Leg.* ii. 1.)

BRITISH ARCHÆOLOGICAL ASSOCIATION IN SHROPSHIRE.*

THE course of our report has brought us to Friday, August 10, when, with the exception of a visit to the lead-mines at Shelve, where the old Roman workings were pointed out, the drive was taken direct to Linley Hall, the seat of the Rev. J. F. More, who had prepared for the mental delectation of the visitors by exhuming the aqueducts and other parts remaining of a Roman villa, and exhibiting many antiquities, amongst which was a Roman pig of lead, lying beside a modern one, showing how similar they were in shape. It was stamped IMP. ADRIANI AVG. There were two oak blades of spades, said to be also Roman, and in excellent preservation. They were flat, and something like the blade of a baker's peel, but broader, and with a hole near the short projection on one side.

An excellent *déjeûner* was partaken of, and perhaps not the least remarkable thing seen was the splendid service of old china, which was said to be one of the only two services ever exported from China? The health of the host, and of Miss

* See p. 523, *ante*.

More, the hostess, having been given, the company spread themselves through the grounds for a short time, as More Church had been cut out of the programme, apparently with the tacit consent of all, for every one seemed content to remain, and it was late before the departure was effected.

In the course of the day the Rev. Mr. Humphreys read an Etymological paper on the names of the locality, and the Italian Hall was described by the Rev. Mr. More. At the evening meeting Mr. George Maw read a paper on Tessellated Pavements, illustrated by drawings of those in Uriconium.

The Rev. Mr. Scarth read a History and Description of Wroxeter Church, which was visited the next day. Mr. Thomas Wright explained briefly the characteristics and history of flint instruments, and exhibited M. Bouché's collection, and an enormous quantity from the neighbourhood of Bridlington, in Yorkshire. In the course of his remarks, he stated that he did not agree with the generally received division of implements into the stone period, bronze period, and iron period, and believed the time would come when that theory would be overthrown. He produced a large number of flint forgeries, which, however, were easily detected from the ignorance of the forgers, who used files in their manufacture. On the great question involved in the recent discoveries of flint instruments in early strata, he had no opinion to offer. The whole subject is to be sifted during the next session of the association.

The greatest attraction of the Congress was Uriconium, which was reserved for the last day, Saturday, the 11th, and fortunately the weather was fine. There was again a large increase of numbers; and, as the programme was not quite so long, the time of departure was not quite so early as on previous days. Hitherto the hour of starting had been nine o'clock, but on this day it was half past ten, and half an hour's drive brought the party first to Haughmond Abbey, which has been much changed by workmen having for several years been employed to almost reconstruct it.

Mr. E. Roberts conducted the Society over it, and said that it was an abbey of canons of St. Augustine, and, as compared with Wenlock, was scarcely more than half its value. It was said to have been founded by William Fitz Alein, Earl of Arundel; but, on an examination of the buildings, he agreed with the Rev. Mr. Eyton, who drew his inferences from documents, that at all events none of the buildings remaining were of that date. The endowment and foundation might much precede the erection of the abbey; and this, as well as most abbeys, showed progressive building in its several parts.

The church itself is entirely destroyed, except one doorway, of semi-Norman date, at the west end of the south aisle leading to the cloister. This, and the front of the chapter-house of the same date, have been unnecessarily mutilated at various times, down to the present century. The chapter-house has repeatedly been stated to be entire, whereas the front only remains: the other is not only much later, but considerably smaller, and is of very inferior character. He exhibited a sketch from a drawing made in 1813, to show that since then the aspect is entirely changed. The ceiling is very heavily timbered, in the style of the 15th century, but that and the windows in the bayed end appear to have been brought from other buildings of that date, and rebuilt here at some later period. This also is the case with the bay window in the abbot's lodging. The great cloister has only part of one wall remaining, in which are two semi-Norman arched recesses, said to have been for a lavatory; but Mr. Roberts thought he should be able to show that there was a room there, and the arcading was one end of it.

The Abbot's Refectory has window-seats in the recesses, and a large chimney-corner, of late Perpendicular work, probably inserted much later. There are two sepulchral slabs of the thirteenth century, in the place where the choir was, but they were removed from the chapter-house. One was stated to belong to the great-grandson of the founder, while the written account at the Abbey described it as of the great-great-grandson. This would rather lead to the conclusion that the founder was the second Fitz Alein. The inscriptions are in Norman French, as follows:—

WOVS KI PASSE PAR ICI PRIVS PVR L AME JOHAN FISALAIN KI GIT ICI DEV DE SA ALME EIT MERCI AMEN.

& YSABEL DE MOR . . . . R [Mortimer] SA FEMME ACOST DE LI DEV DE LVR ALM . . T MERCI AMEN.

There was recently a seal found here, which was said to be inscribed with the words, "Robert de Sherrington, Abbot of Haghmon;" but as there was no such abbot recorded, he had looked at an impression, and found it simply, "Sigillum Roberti de Sherringtone," and apparently of the thirteenth century. After inspecting a well-house of the fifteenth century in the Abbey Woods, Mr. Roberts concluded by saying that there is scarcely any part of these remains which can be looked upon as in their simply decayed state, every part having been renewed, displaced, or altered in arrangement, and destroyed in detail. The greater part of this was done by the late proprietor.

Battlefield Church was visited *en route*, and was briefly described. It is a simple church, with nave, chancel, and western tower. The date of the grant of the land is 1403; but some of the windows are so clearly of an earlier date, that there must either have been a church there before, or the decorated windows must have been brought from some other building. The church is under restoration, but it is feared that the Doric columns in the interior will not be removed. About three feet below the present surface is an almost entire encaustic tile pavement, and some lead coffins have been discovered beneath. The east window has considerable remains of old glass, but much disarranged. Attention was drawn to a representation of a chalice in the glass, which might give a clue to the subdeacon's slab, examined in the abbey church on Monday. The chalice was surmounted by the wafer, with the sacred monogram as a nimbus, with rays of light spreading from it. Some remnants of indented ridge tiles were dug up, and showed that there had been a cresting.

Wroxeter, the site of the ancient city which has been disinterred, occupied a considerable time in examination, but it has been so fully and so recently described by us,* that we need only add, on professional points, that the building now supposed to be the Basilica (as appropriated by the conductor of this journal, at a meeting of the British Archæological Association in London at the commencement of last year), has been filled in again, for want of space for the soil excavated, and that part of the tessellated mural decoration takes the form of a guilloche-patterned skirting, in two colours. The drains discovered have a drip at each stone with which they are floored, and the so-called gutter is blocked up occasionally by cross pieces of stone, or boulders. When pointing out the hypocausts excavated, he stopped for a moment at a small apartment, which he said appeared to have been the place where the fires were made, and was a feeder to the hypocausts, for here was found a quantity of coal and charcoal. The first and largest hypocaust was then entered. This was 37 feet by 25 feet, having at the north end an apse, and was coloured on the outside, showing that the Romans coloured their walls both outside and inside. The apse was formed of strong masonry, some very large stones being found, and one of them having a piece of iron fixed in with lead. To this probably some ornament had been attached. Mr. Wright mentioned that, when this hypocaust was first opened, it was remarkable for the state of preservation in which the columns supporting the floor were. The floor was for the most part gone in all these hypocausts, with one exception; but when these were opened, 120 of the columns were counted, each about three feet high. Unfortunately, however, soon after the discovery was made, a number of colliers got into the excavations, and, in mere wantonness, broke the columns to pieces. They had, however, been subsequently put up again by Dr. H. Johnson, as nearly as possible in their original state. In commenting on these hypocausts, five or six in number now discovered, Mr. Wright said he thought there could now be no doubt that the buildings which they were surveying were the public baths of the city of Uriconium. Some half-worked stones were found. They were now in the exact position in which they were discovered, as if the workmen had been disturbed in their labours by the attack on the city. This was at a place where one of the walls had evidently been mended after its first construction.

Wroxeter Church was described in the Rev. Mr. Scarth's paper as of Saxon foundation, dedicated to St. Andrew. The Norman part consists of a south door in the chancel, now built up. The Rev. Mr. Eyton states that the earliest portion is of the time of Henry II.: the windows in the north wall are of the beginning of the Early English period. The window on the south side of the chancel, and the chancel arch, are of the Decorated period. Other parts are of Perpendicular. The font he thought was an old Roman column, hollowed out by the Saxons. Mr. Scarth now conducted the members over the church; and, on the conclusion of his observations, Mr. Roberts was called upon for his description. He said that the sculptures showing in the south wall were certainly Saxon in their appearance, but had been built in. The semi-Norman south door of the chancel has a transitional character externally, and even a dog-tooth ornament in the label internally. The depressed chancel, which he acknowledged as having at first puzzled him, was certainly Decorated, and the peculiar four-centred shape was due to settlements. The tower-arch was of about the same date, but the imposts were Norman, and well sculptured: these were only seen from the gallery, for which they had been cut away on the face next the nave. He had been given to understand that there was a fine hammer-beam oak roof; and he strongly urged the authorities to have the plaster ceiling removed, and also some high chancel-pews, one of them having a canopy like an Elizabethan bedstead.

Atcham Church was examined on the road homewards, and was the last on the extensive programme of the week. The church is dedicated to St. Eatta, and is of Saxon origin, although none of the works of that time remain. The east wall has a peculiarity, such as was noticed at Ludlow. There are two chambers of 3 feet or 4 feet square, with small apertures externally. These were, probably, for the administration of the Sacrament to a few confessing lepers.

In the evening the last dinner was attended by an unusually large number, as generally Saturday evening meetings are thinly attended. Numbers had departed, but upwards of forty sat down.

The closing meeting was well attended, and a paper contributed by Dr. Wright, on the distorted skulls found at Wroxeter, was read. Mr. Thomas Wright disputed the conclusions at which Dr. Wright had arrived, and expressed his conviction that there was original malformation, and that the alteration was not posthumous. Considerable discussion ensued, and the subject was deferred till the winter session.

Some interesting records of Hereford were read, and this closed the business of the congress.

Thanks were warmly voted to the several officers and committees, and finally by acclamation to the president, who, with his lady, had been unintermitting in his attendance at all the excursions and meetings of the congress. The president, in returning thanks, gave a *résumé* of the proceedings of the week, and thanked individually every one who had contributed by papers and descriptions to the success of the congress, which had been one of continual exertion, arising from the great distance to which the excursions extended.

* See especially our volume for 1859, pp. 372 and 517.

ON THE MECHANICAL EFFECT OF COMBINING GIRDERS AND SUSPENSION CHAINS, AND THE APPLICATION OF THE SYSTEM TO PRACTICAL PURPOSES.*

Previous calculations and experiments on girders enable an estimate to be made of the deflection of the girder of a given length with a given weight, and therefore the deflection of any girder intended to be attached to a chain can be calculated.

It accordingly occurred to me, that if the relation between the deflection of a wave attached to the chain, and that of the same girder unattached, could be obtained, we should be able to ascertain precisely what girder to allow to a chain, so that a given load would produce a given amount of deflection.

For this purpose I made a series of experiments upon girders of different kinds, attached and unattached to the chain, and the following are the results arrived at:—

Experiments.

The first experiments were made with a model girder to correct scale, but it was found that, when attached to the chain, the deflection was too small to be observed, and it was found necessary, in order to magnify the wave and make its amount more distinct, to have a girder of a quarter the depth of the model girder, which was made of angle iron ¼ inch thick.

The deflection of this girder, without the chains, with a load of 42 lbs. placed in the centre, was 1·2 inches.

The deflections of the wave with the chain attached, and 227 lbs. distributed over the girder,

* By Mr. P. Barlow. See page 526, *ante*.

when the weights were placed at ¼ from the high tower, were, with—

	¼ from high tower.	Centre.	¼ from lower tower.
lbs.	in.	in.	in.
56	— ·10	— ·01	+ ·05
112	— ·20	— ·04	+ ·12
168	— ·28	— ·06	+ ·16

Experiment 2.—In this case the weights were placed ¼ from the low tower.

56	+ ·06	— ·01	— ·12
112	+ ·15	— ·05	— ·25
168	+ ·18	— ·07	— ·36

The deflections here averaged ·32 inches, with 168 lbs., equal to ·08 inches, with 42 lbs., or ⅓ the deflection of the girder without the chain.

It was still obvious, from the deflection at the centre, and little rise exhibited in the wave, that the stretching of the chain to bring the metal surfaces to bear still sensibly influenced the result; and I had another wooden girder made, consisting of a plank 7½ inches in width, and three quarters of an inch thick, in order still more to magnify the wave, and to diminish the error from the stretching of the chain.

The deflection without the chain attached was 1·48 inches with 10 lbs.

Experiments with the Chain attached.—With 56 lbs. placed at ¼ from the high tower on the girder, which was previously quite unloaded, the deflections were, at—

¼ from H. T.	¼ from H. T.	¼ from H. T.	¼ from H. T.	¼ from H. T.
— ·31	— ·48	— ·32	— ·02	+ ·22

¾ from H.T. + ·29 ¾ from H. T. + ·15

Experiment 2.—70 lbs. being equally distributed over the girder, and 56 lbs. at ¼ from high tower.

— ·28 — ·42 — ·25 + ·04 + ·23 + ·28 + ·20

Experiment 3.—150 lbs. all over weight in same place.

— ·20 — ·35 — ·20 + ·02 + ·20 + ·23 + ·14

Experiment 4.—193 lbs. equally distributed; 56 lbs., as before.

— ·18 — ·31 + ·17 + ·05 + ·18 + ·20 + ·14

The deflection here indicated with the model loaded with a weight representing 96 tons on the bridge (which experiment was several times repeated), was ·31 with 56 lbs. — ·055 with 10 lbs., or $\frac{1}{56}$ of the deflection of the girder without the chain.

This result being so much at variance with the general view of the subject, although very nearly in accordance with my calculations, I determined to verify it by a smaller girder, 6 inches by three quarters of an inch thick, which would render the wave still more visible, the observations being made with great nicety.

The deflection at the centre, when not attached to the chain, was 2·375 inches with 8 lbs.

Girder attached to the chains, 193 lbs., being equally distributed over it. The deflection, with the weight placed ¼ from the high tower, was—

lbs.	¼ from H. T.	Centre.	¼ from L. T.
56	— ·64	+ .13	+ ·53

Experiment 2.—With 56 lbs. at the centre of the bridge, the deflection was ·30.

The deflection of the wave here exhibited at ¼ of the length with the bridge loaded to a weight equivalent to 100 tons on the actual bridge, which experiment was repeated several times with the same result, was 0·64 inch with 56 lbs., the deflection without the chains being 2·375 with 8 lbs., or 25 times the amount, thus confirming the previous experiment—a result so at variance with the preconceived notions of many engineers, that it is to be expected, in some instances, it will be received with incredulity; but an investigation will show that the result is in accordance with the law $\frac{l\,3\,w}{b\,d^3\,x}$ = a constant quantity.

If the girder were supported only in the middle, the deflection of the half girder would be ½; but, as one half of the girder cannot deflect without the other half rising from the action of the chain, it is reduced to $\frac{1}{16}$; but the girder is not supported at one point only, but at various points, which will still further reduce the deflection.

Assuming ·27 to be the true average result, I have calculated the necessary dimensions of a girder as follows:—It being determined by the Board of Trade what amount of weight should be the test to produce a given deflection on half the girder, we may derive from existing girders the weight which must be given to such a span as the Niagara bridge to reduce the wave to a given amount. Let us assume, for example, that 200 tons on one-half the span shall not produce a wave exceeding 2 inches. To deduce the result from the Boyne viaduct, we have the ascertained fact that in a girder of 264 feet span, the deflection with 540 tons all over was 1 foot 9 inches.

The deflection, if of the length of the Niagara bridge, would have been 264^3 to 283^3 : 1·9 : 57 inches $\frac{57}{27} = 2{\cdot}11$ inches is therefore the deflection which would have been produced by a weight of 540 tons, and therefore 200 tons would produce ·79 inch deflection.

The weight of a girder of the same section as the Boyne Viaduct would be 932 tons, 264 : 820 : 300 : 932 tons, and to produce 2 inches deflection, 368 tons, if made of ordinary iron; but if made of superior metal, the reduction of weight will be in proportion to the increased strength.

To obtain the result from the Britannia Tube, we have as an ascertained fact that its weight is 1,600 tons, and that its deflection with 200 tons all over, 1·25 inch 240^3 : 820^3 : 1·25 : 7·04.

The weight of the tube of 820 feet long would have been 2,852 tons.

The deflection, if attached to a chain, $\frac{7{\cdot}04}{24}$ ·36 inch.

The weight, therefore, to produce 2 inches deflection with 200 tons, will be 370 tons, which nearly agrees with the calculations from the Boyne lattice bridge. To compare the Britannia bridge with a suspension end of the same span, and to produce the deflection, we have $\frac{20}{37}$ weight of the chains equal 500 tons.

Concluding Remarks.

By the above calculation we arrive at the result that spans, much above 820 feet, may be constructed even without improved metal, where girders are not practicable; and that in large spans, where they are practicable, a suspension girder, tested with the same load and to the same deflection, will only require one-fifth or one-sixth of the metal, and will be a safer structure from depending on the extension of the material.

This result is the more important because the advocates of parallel girders have acted on this assumption—that the construction of a platform 450 feet long, sufficiently rigid for railway traffic, almost amounts to the construction of a girder itself.

When my paper was read at the Dublin meeting, there were several girder engineers present, but there was no observation made during the discussion upon the especial object of my experiments, except by Professor Rankine, who investigated the subject on the spot, and arrived at nearly the same result.

The only observation made by other engineers was to the effect that there would be some oscillation or motion which could not be arrived at by investigation, but without any denial of the truth of the deductions of my experiments.

Now I venture to contend that the amount of deflection of a given girder with a given weight can as clearly be arrived at by investigation when it is attached, as when it is unattached to a chain.

There may be practical points more in favour of one construction than another, which I am prepared, as a practical man, to discuss; but these are questions rather for the Institution of Civil Engineers. But whatever these practical failures may be, there must be a certain deflection which arises with a given force or weight applied, and it is this—the first and most important inquiry in every mechanical structure, which is alone the subject that I am now desirous should be investigated and understood.

With reference to any supposed practical objection to suspension structures, when applied to railways, even when the wave is cured, I will only observe, having had great experience in railway construction, I am unable to form an opinion, without further explanation, of what is referred to, although some railway engineers adhere to the idea that no weight of girder will make a chain rigid, yet this was the original proposition for the boiler, but some of the most eminent men have expressed a contrary opinion. Telford, with whom I had the honour to serve for a time as pupil, and Sir W. Cubitt, whom I also served several years as engineer on the London and Dover Railway, and who has had great experience in railways, are both fully satisfied that the suspension construction might be adopted to all description of bridges.

Mr. Rendel, who constructed the Inverness bridge, and Mr. Vignoles, who constructed the Kiev bridge, in Russia, have expressed a similar opinion. Both of these bridges had stiffening girders, of small depth, and the effect from observations made on passing loads (the Inverness bridge having had a locomotive over it on a truck) fully bears out my calculation of the ratio of the deflection with or without a chain.

I may add, that in America, suspension bridges have been used for aqueducts with success, as well as for a railway bridge, and that the wave of the Niagara bridge, which has a girder of wood, is less than my calculation would give; in fact, I should have doubted whether any wooden girder construction could have reduced the wave of a span of 820 feet sufficiently for heavy traffic either for road or railway.

It may be true that public feeling is against suspension bridges, from the repeated failures arising from want of metal, and from no means of curing the wave, which arises, as my model has shown, by the smallest weight applied at any one point; but this is only a reason why men of science should look at the question and correct an error which is a check upon useful enterprise and upon the progress of public improvement.

When alluding to the adoption of a system of large spans for the relief of London traffic, it was not intended to express a decided opinion that this is the best mode of removing the difficulty, although I believe, on mature consideration, it will be found to be so, as the objections to the other modes suggested are very great.

Tramways in the streets will be more beneficial than is probably expected, but as London streets are generally so narrow, little can be done by this system, unless stopping at shops or residences is prohibited, except at appointed places.

The construction of a viaduct consisting of a series of shops, with a railway on the top and a street on each side, as suggested by Sir Joseph Paxton, would be the most perfect arrangement, but the cost would be serious; and the railway must follow the surface of the ground, or nearly so, which would render the gradients unfavourable.

The scheme, however, which contends with the greatest variety of difficulties, although actually in course of construction, is the tunnel under London. It is expensive, not only from destroying property on the surface, but from interfering and disarranging the sewer, gas, and water pipes, &c., under the surface. The passengers will be inconvenienced by travelling in the dark, and in a tunnel in which the atmosphere (being immediately under the surface of a crowded city), must be necessarily very impure.

An underground system has also the objection that the application is limited to the elevated parts of London, as, if below the level of high water, it would be liable to inundation.

The use of steam power is also prohibited by Act of Parliament; and Parsey's air engine, not being applicable, the girder system has, in this respect as well as others, the advantage, as steam power may be employed if necessary.

In conclusion, I will, however, observe that whether suspension girders are applicable or not to the particular purpose of London traffic, there are many cases where the benefit of railways may be extended by a safe and economical system of large spans, where they would otherwise be prohibited by the cost of execution, and I therefore trust not to have been in error, as far as relates to the mechanical points, in bringing this important subject before the British Association.

OUR BLACK DIAMONDS.

John Bull finds a piquancy in panics that is not altogether objectionable to him. Panics are, to his ordinary fare—the roast beef and plum-pudding of the British constitution,—palatable *entremets*, leaving, perhaps, a certain amount of thirst and fever behind them, but still imparting a zest to his diet that plain roast and boiled would not afford. Our forefathers relished the same appetising fare. A mysterious rumble, set down for an earthquake, kept our grandmothers from Ranelagh and *faro* for a whole season; and an unexpected comet in those times made more converts to piety than the most popular preacher. In these latter days the Cherbourg dockyards, under the *nom de cuisine* of *pâtés d'invasion*, were made much of. A certain weed, newly found in our rivers, and threatening to choke them all up,—so says the *Carte*—has also been served up at the national feast. An *entrée* of more importance and more highly seasoned, known as "the great tribulation coming upon the earth," has been partaken of in fear and trembling; while a still more recent dish has been introduced to our consideration, extracted from the probability of the failure of our coal supply. Making due allowance for John Bull's taste for false alarms, the facts in reference to the last conjured panic remain the same. There is an end to everything, and our coal-fields are not exempt from this universal law. We have used up what were no doubt considered to be our inexhaustible forests, and, seeing that our present annual consumption of coal amounts to sixty mil-

lions of tons, we must in process of time come to the last coal seam. Compare our comfortable firesides with the execrable stoves of our continental neighbours, and then let us congratulate one another that the failure will not be in our time. Sufficient for the day is the evil thereof.

We are deeply indebted to the coal trade, not only for our cheerful homes, but for the many remarkable inventions, discoveries, and adaptations, to which the prosecution of it has given rise. But for the coal trade, we should still be burning oil in our streets, as they do to this day in St. Petersburg. But for the coal trade, we should be travelling at the old stage-coach rate still: there would be no return tickets to Brighton for 2s. 6d.; no excursions to Paris for 20s.; no trips to the mosques and pyramids; in fine, this is another instance of great results attending small causes: we should be in a very different stage of progression but for the finding of this fossil.

When was it found? Who found it? "Naebody kens," answer the pit laddies. "Probably," suggests the most competent authority in the north, "if the subject could be fully investigated, we should find that the Chinese were the earliest coal miners; for Marco Polo attests the general use of this substance in China in the thirteenth century." Antiquaries appear to be now permanently convinced that coals were occasionally used by the Romans, cinders having been found in Roman *débris* in several Roman stations. That they only availed themselves of coal for fuel when wood was not procurable in convenient quantities is assumed from the fact that great surface seams are still apparent, close to more than one station, which present unmistakeable evidence of not having been touched. The Saxons made no general use of coal: peat and timber were in sufficient abundance for their wants. But coal must have been burnt by them occasionally for particular purposes; for we read that in the year 852 Wulfred of Sempringham paid to the Abbey of Peterborough sixty cart-loads of wood, and twelve of fossil, or pit-coal. The proportions of this payment confirm the conclusion that the use of coal was exceptional; otherwise, taking it for granted that the wood was intended for fuel, they would have been reversed—sixty of coal to twelve of wood. Possibly, as the monks are known to have been very expert in the manufacture of elegant metal work for the embellishment of their churches and altars, they may have come to the knowledge of the very superior advantages of coal for this purpose. After the Norman conquest, cart-smiths appear to have burnt coal systematically in the pursuance of their trade. The celebrated "Boldon Buke," (the north-country equivalent for "Domesday Book," which, it will be remembered, does not include the four northern counties,) mentions coal several times in connection with smith-craft. The coal trade, however, can scarcely be considered to have commenced before the year 1239, when Henry III. granted a charter to the freemen of Newcastle-on-Tyne, for liberty to dig coals; and, when a regular export trade was set on foot, royalty favoured the new fuel, and ten shillings' worth of it was burnt at Edward II.'s coronation.

No sooner was coal employed by the various manufacturers of the metropolis, than an outcry was raised against it which, with but occasional intervals of quiescence, has lived down to the present day. The nobles and commons sitting in the high court of Parliament formally appealed to the reigning monarch (Edward I.) to prohibit the further combustion of coal, as the smoke arising therefrom contaminated the atmosphere and rendered it unfit and unwholesome for his liege subjects to breathe. Their sovereign lord the king immediately issued a commission forbidding the use of the offending fossil, and empowering his officers to destroy the furnaces and kilns of any refractory persons who persisted in burning it. Evelyn, in Stuart times, complains bitterly of the state of the atmosphere from "the hellish and dismall cloude of sea coale." And when, in the Georgian era, a certain Fredk. Hoffman published a work at Geneva in which he attributed the frequency of consumption among the English to the injurious effects of coal smoke, the national consternation knew no bounds. On the other hand, we turn to a letter from Sir Horace Walpole, in which he writes he must leave Strawberry-hill, with all its valued associations, for Berkeley-square, for in London alone can he find health,—a fact he over and over again alludes to in his correspondence as being caused by the numerous fires, which dry the air and make it more fit for delicate people. And in the late revival of the prejudice against London smoke, an ingenious chemist asserted, through the columns of the *Times*, that the consistence given to the London atmosphere by its fogs and smoke rendered it, so to speak, highly nutritious.

The impetus given to the trade by the royal grant, and perhaps, too, in some measure, by the stanch opposition, was evidenced by the opening of new collieries. It is on record that the prior of Tynemouth let two new collieries near Elswick; and, what is very interesting to know, that the annual rent of one of them was six marks. In 1351 the burgesses of Newcastle were beholden to Edward III. for a license to dig for coal without the walls; and, seven years afterwards, for leave to dig in additional new places—the Castle moor and Castle fields.

In the fifteenth century, Æneas Sylvius, better known, perhaps, by his subsequent title, Pope Pius II., deposed to seeing lumps of black stone given for alms at the Scottish convent gates; nevertheless, the use of coal was pretty nearly confined to furnaces, forges, and kilns, until the middle of the sixteenth century, when it had advanced so far in public estimation as to be burnt in kitchens and halls. Wood, with its autumn-scented wreaths of mist, arising from the hearth, as from some household altar, was still used in my lady's parlour. Wood was also long afterwards employed by particular trades, or branches of trade, such as smelting iron, glass-making, brewing, dyeing, and chemical operations. Indeed, it was not till timber had become so scarce as to be sold by the pound in some districts that the resources of our coal mines were properly applied by our forefathers. Queen Elizabeth passed four Acts of Parliament to prevent the needless destruction of timber, the effects of which legal hampering manifested themselves in the gradual reduction of the number of furnaces from 300 to 59. The iron trade was most affected by the prohibition of wood fires; for in 1740 not 18,000 tons of pig iron were made in all England. This was 120 years ago. Our present annual rate of production exceeds 2,000,000 tons, and requires 12,000,000 tons of coal to smelt it and convert it into bar iron.

The present paper concerns things that are of the pit, yet not in the pit, otherwise we might tell how there are, to this day, in remote districts of Northumberland, small collieries where the mining operations are nearly as primitive as those of Edwardian times,—where a load still means as much coal as a packhorse can carry on his back, and where the machinery is of the rudest description. We may, however, mention one of the early shifts to obtain light in a mine. The moderns complain of the dim light emitted by their Davys, and deprecate the tardiness of invention that has not yet made gas applicable for mine lighting, but what would they think of fish light? Yet the phosphorescent gleam from dried fish was the only alternative the Mediæval miner had to pitch darkness in many workings.

Coal was taxed as early as the fourteenth century, when 6d. per ton was levied every quarter of a year upon all ships leaving Newcastle with this freight, the necessity for which innovation was caused by the fact that "Scardeburgh" was threatened by the French, and the sinews of war were required to defend it. Soon afterwards the form of the duty was altered to 2d. per chaldron upon all coals not sold to freemen of the port of Newcastle, to counteract a trick of the trade that heaped twenty-two and sometimes twenty-three chaldrons into a keel that was only charged duty for twenty chaldrons. This impost appears to have been, in great measure, evaded too; for, on the accession of King Edward's sister, "Sweet Sister Temperance," Queen Elizabeth, the arrears amounted to a very large sum, which she claimed. The payment was ultimately commuted by an agreement, which fixed the future duty at 1s. the chaldron; while such coals as were sent over the sea were to be charged a duty of 5s. per chaldron. King James reaped a rich harvest from this arrangement; but not altogether content with it, he superimposed an extra tax of 3s. 4d. per chaldron upon the coal intended for home consumption, and exactly doubled the duty originally levied upon coal sent to foreign parts by "our late sovereign lady of famous memory, Queene Elizabeth."

The Great Fire of London was the immediate cause of the exaction of a duty on the coal consumed in the metropolis. A large fund was required for the re-erection of so great a portion of the city as comprised St. Paul's Cathedral and fifty-two parish churches,—a difficulty the Parliament met by imposing a tax of 1s. per chaldron upon all sea coal brought to London. The modest sum raised in this manner proved quite insufficient; upon which the Parliament increased the tax to 3s. per chaldron,—much, no doubt, to Evelyn's satisfaction. The old worthy must have felt mightily content when it was subsequently increased to 8s. In the present century, in the war time, the duty ran up to 9s. 4d. per chaldron: in 1830 it sank to 6s.: in 1850 the greatest grievance that remained for the Londoners was a municipal charge of 1s. 1d. per ton.

So late as the reign of George III., when Pitt, Fox, Burke, Wilkes, and Junius, were all preaching universal freedom, serfdom existed in the Scotch colliery districts: when a colliery changed hands, the colliers with their wives and children were sold with the property as part and parcel thereof. These victims of legislative sluggishness were not emancipated till the year 1775. And still more pitiable victims, female colliers, were not protected from underground drudgery, by legislative enactment, till 1840. These, with the sad casualties resulting from explosions, are the dark spots on the picture.

It is noticeable that the superstitious feeling of the dark ages peopled the mines with fairies; and death from noxious vapours was attributed to the breath of a certain pale horse. The means taken for recovering persons whose animation was partially suspended by the phantom's fiery breath was one we should hesitate to adopt at the present day. A clod was immediately dug up in a green place, and the patient's face inserted into the hole left by its removal. After lying with his face downwards for a few minutes he was removed to fresh earth. If no signs of life appeared after three or four repetitions of this process, it was concluded there was none left in "the puir body."

The names of some of the most brilliant personages in history flash out from the grim records of the coal trade. In 1529 we have Cardinal Wolsey, in his capacity of Bishop of Durham, regulating the affairs of the collieries in his palatinate. Then we come upon Cromwell as the partner in an undertaking to smelt iron with pit-coal. Alas, for the stanch-hearted pioneer! it failed, and was abandoned as an impracticable scheme. Then court scenes in the reign of the merry monarch pervade the pale page, where we read that Charles II. settled on his natural son Charles, Duke of Richmond and Lennox, the duty levied on the trade of the Tyne, with conditions that, on his demise without heirs, it should be enjoyed by Louise, Duchess of Portsmouth. Our black diamonds have lent brilliance to many a *bon mot*. One of the lady-wits of George III.'s court remarked, during an interregnum between the dissolution of one ministry and the formation of another, when the Earl of Aberdeen and the Duke of Newcastle divided the chances, in public estimation, of being prime minister, that his majesty appeared not to have made up his mind as to which coal he would burn in his cabinet,—whether it should be Scotch coal, Newcastle coal, or Pitt coal.

WORKS ABROAD.

An interesting bridge is in course of construction at Lyons, formed of rockwork, to afford communication between the great island of the Parc de la Tête-d'or and the remainder of the park, and promises to be a most charming piece of work. The first arch on the side next the island is just finished, and forms a vast grotto half buried under the bank of the river and half overhanging. It is to be accessible by three irregularly-shaped arcades, one on each side, approached by footpaths on the banks of the river, and one in front through the very abutment. All this is built with fragments of micaceous schist, cemented together with Roman cement, so as to constitute a monolith. Cavities and crevices have been left for the introduction of earth for ivy and stonecrops, &c. Another bridge, partly wood and partly rustic stonework, will connect the other side of the island with the terra firma of the *parc*. The interior of the island is to be fitted up for the reception of wild beasts in caverns, as in the Zoological Gardens of Marseilles; so that the most easy-going and stay-at-home citizen may contemplate the deserts of Africa or America with the groups of tigers, lions, and pumas, and experience all the *émotions des grands voyages*, without fear of danger.

The Minister of Public Instruction in Modena, having been informed that there existed some pieces of music of the sixteenth and seventeenth centuries, mice-gnawn and worm-eaten, in the Palatinate Library, and that another collection equally valuable was stored in the National Palace, has ordered them to be put together and preserved. M. Angelo Catelani, master of the Cathedral Chapel and conservator of the library, much experienced in bibliography and musical literature, has been recently ordered by the

Government to draw up a catalogue of these musical works, among which are many of the famed Stradella, many having been never published. This catalogue, accompanied by biographic, bibliographic, and historic notes, is to be published to the world.

A great exhibition, industrial, agricultural, and horticultural, is to be held the 5th September next, in the town of Saint-Dizier (Haute-Marne), the centre, and the market, of the most important French metallurgic districts. The departments of the Seine, Aube, Côte-d'Or, Yonne, Haute-Soane, Vosges, and Haute-Marne, are invited to contribute. The ground proposed for this meeting contains 50,000 square metres. It is a magnificent park, round which the Marne winds.

The collections of the medal and antiquities department of the imperial library, Paris, have just been enriched by a bronze group of the Gallo-Roman period. It was found on the 1st July, last, at Loisia near Saint-Amour (Jura), and purchased at a high price by a distinguished connoisseur — M. Prosper Dupré, whose collection of Roman medallions is well known to all connoisseurs. This group, as well remarkable for the rarity of the subject as for its perfect state of preservation, represents a half-naked divinity with a diadem, seated sidewise on a mare followed by her foal: on the base of the monument, which is no less than 27 centimetres (about 10½ inches) in height is placed an "offering-box" for the faithful. This divinity is *Epona*, the guardian angel of stables and horse-training, as M. Dupré has judiciously demonstrated in a letter of the 15th ult., in which he announces to the conservator of the cabinet of medallions his generous intentions.

The new buildings of the Imperial Library advance rapidly, and are nearly terminated. These constructions are only repetitions of the principal dispositions of those portions previously raised, with the exception of a sort of round tower.

THE WEDGWOOD MEMORIAL.

The committee have resolved upon a second competition for the proposed institute, and invitations have been issued to six of the architects whose designs in the recent competition were most approved. Specific instructions are being prepared by a sub-committee, aided by Mr. Hammersley, of the Manchester School of Art. We have been requested to state, in reply to the letter which appeared in our columns (p. 518, *ante*), that the circumstance of the designs, No, 18, "*Jus supra Vim*," being placed second in the report of Messrs. Robinson & Hammersley, was simply owing to the accident of its position in the catalogue. "The whole of the designs were hung for examination in the order in which they were unpacked, and the four numbered 2, 18, 19, and 27, were most approved. The premiums were unanimously awarded to Nos. 2 and 27."

RATING OF CANALS.

Under a Canal Act the proprietors were protected against too great an increase of rating, by a provision that the company should be rated in the same proportion as the lands and grounds lying near the canal should be rated. Several valuable buildings were erected near the canal, and were highly rated. The company objected to be rated so highly as the nearest land containing these lands, and it was held that the rating of the most valuable and less valuable land should be added together, and the canal rated according to the aggregate value of the whole.—*Re the Glamorgan Canal Company.*

WORKS IN IRELAND.

A correspondence between *the late* Thomas Moore (the Irish poet), whose bronzed effigy now stands in College-street, Dublin, and Mr. George Roe, D.L. and alderman, addressed in his corporate capacity, on the scandalous state of the University (T.C.D.) boundary wall, has taken place recently, and elicited from the latter that the city engineer and the college clerk of works are in consultation on the subject. It would indeed seem to be time.

We understand that Mr. Worrall, C.E., is to be the new county surveyor for Derry, in the room of the late Mr. Stewart Gordon, C.E.

Gas has been recently introduced into Ballina, and is selling at 8*s.* per 1,000 cubic feet, irrespective of water-rent. The works were erected by Messrs. Donald, Wilson, & Co., of Paisley, chiefly on speculation, the town commissioners guaranteeing 200*l.* per annum for the public lights.

The Towns' Improvement Act has been adopted in Tullamore.

The new R. C. church of St. Vincent, in Dublin, Messrs. Hadfield & Goldie, architects, of which a drawing was exhibited at the Royal Academy, is rapidly making progress. The choir and transepts are raised to the base of the clerestory, the arcade being completed, and the piers to carry the central tower are now being built. The sacristy is roofed. The materials of which this church is built are white limestone dressings and dark rubble. When entirely finished this will be probably the largest R. C. church in Dublin.

A new convent has just been built at Omagh from the designs of Messrs. Hadfield & Goldie, for the religious community some time settled there. The building, designed in a simple manner, contains numerous rooms, and is pleasantly situated near the station of the Londonderry and Enniskillen Railway. The contractor is Mr. Wallis Dorlin, of Dublin, and the cost of the building will be about 2,500*l.* It is to be opened on the 13th of September.

The convent at Letterkenny, in the county of Donegal, is being considerably enlarged from designs by Messrs. Hadfield & Goldie. The new apartments consist of chapel, school-rooms, and dormitory. A square tower terminates the façade, which is extremely simple, and constructed of stone of the locality.

BELFAST, IRELAND.

There is a considerable amount of activity in the building trades here. The only thing which appears to limit its further increase is the price to which bricks have lately risen. Several new companies have commenced their manufacture by machinery; but the season has not been propitious, and bricks cost now double, or nearly so, what their price has been. At least 99 per cent. of all the buildings erected here are chiefly built of brick; and until very lately the whole were made by hand, with only one exception, viz. at Ravenhill, where the proprietor, after repeated failures, at last succeeded in making perforated bricks, of an excellent quality, by machinery. But, as he had a monopoly of the trade, his prices were high, which has induced others to erect machinery, which it may be hoped will shortly reduce the price to what would give a moderate profit to the manufacturer. One brickmaker has engaged to supply 1,800,000 bricks to the contractor for the erection of the Ulster Hall, a building intended to be devoted to musical purposes, the erection of which has been commenced. Two Presbyterian churches are also being built, and two others having large additions made to them; and since January last 200 new houses have been occupied for the first time. Turkish baths are being erected in Donegal-street; and, a few days ago, at about 8 a.m., the cornice in front fell, carrying the scaffolding with it to the ground, destroying part of the hoarding along the footpath. Fortunately, the workmen were absent at the time, or they could not have escaped unhurt; and no person was injured on the street. The cause assigned is that the cornice projected too far for the quality of the materials employed. The roof was slated at the time.

The basement story of an extensive warehouse for Messrs. Dunville & Co. has been partly completed opposite the Roman Catholic Cathedral. The town being chiefly seated on ground reclaimed from the sea, piling is the only method which has been found sufficient to secure the structure from settlements in any building beyond a small two-story dwelling. In this case, however, as a basement story was to be provided, the foundations have been carried down eight or ten feet below the level of the street, and will, we think, be at least half that distance below the level of ordinary high water, and are about six feet broad. The first-floor will be fire-proof, and formed of brick arches resting on metal girders and columns. The latter rest on blocks of granite bedded on masonry, formed of slabs of sandstone five or six feet square. The girders are about 18 feet in length, and weigh from 17 to 18 cwt. each. The building is about 100 feet long by 80 feet wide, and will be two stories in height besides the basement.

A new Roman Catholic church has also been contracted for, to be erected on the Falls-road, near the model schools. The style is to be Decorated Gothic, with nave, aisles, porch, and two towers. The amount of contract is nearly 11,000*l.*

Strenuous efforts are being made to revive the project of railway communication between Downpatrick and Newry, where no conveyance ever has been save an outside jaunting car to carry the mail, which ran as often without as with passengers. A company tried to get an Act for this line, with others, in 1845, but were defeated by other railway companies opposing.

AMERICAN NOTES.

The side walls of the great reservoir at the Central Park, New York, have been built up to the required height.

A new art gallery, 200 feet by 35 feet, is being erected on Broadway, near St. Thomas's Church, New York. A collection of paintings from Dusseldorf and elsewhere will be placed in it.

A new free public library is building at Worcester, Mass., with front towards Elm-street of 60 feet and 75 feet in depth. Externally it will present an elevation with a portico, and surmounted by a French roof, and be two stories in height, except at south-east corner which will only be one.

The import of Canadian timber this season to the United Kingdom considerably exceeds that of former years.

It costs 523,355 dollars weekly to clean the streets of New York.

The buildings at Washington are said now to be noble; that of the "Capitol Extension" nearly completed, the "Patent Office," with pure white marble fronts, and the "Treasury building," almost finished, and having a grand colonnade of thirty marble monoliths, being especially so.

A machine that makes 400 barrels a day from logs has been invented, and is at work at Menasha. It is called the Livermore patent.

On the Fox-river Canal upwards of a million of dollars have been already expended in improvement.

MR. SPURGEON'S METROPOLITAN TABERNACLE.

On Tuesday last a meeting of the friends of the Rev. C. H. Spurgeon was held in the new "Tabernacle," which is being erected for him opposite the Elephant and Castle, for the purpose of offering up thanksgiving for the success of the undertaking, and making an attempt to raise the remainder of the required funds so as to open the place free from debt. From a report read it appeared that the contributions were 22,196*l.* 19*s.*, of which the following sums had been expended:—Paid on the contract, 10,000*l.*; for the purchase of land, 5,100*l.*; extra building expenses, 77*l.* 13*s.*; contract for foundation, 516*l.* 10*s.*: law expenses, architect, clerk of the works, and various other expenses, with 4,880*l.* cash in hand, brought the total up to the other side. 5,000*l.* more were required to complete the contract, and about 2,000*l.* more for extras, leaving a total of about 8,000*l.* still required. We gave an engraving of the design as originally selected; but it would seem, from a statement made by Mr. Spurgeon on the present occasion, that the turrets proposed will not be erected. Mr. Pocock is the architect; Mr. Higgs, the builder. We shall hereafter give an account of the structure.

THE SANITARY STATE OF ST. JAMES'S, WESTMINSTER.

The fourth annual report of Dr. Lankester, the medical officer of health to the vestry of St. James's, Westminster, has been printed. It is accompanied by appendices showing the state of the stables and cowhouses in the parish, the houses drained, &c. Dr. Lankester, in his report, says,—"There are 392 stables in this parish, in which are kept 1,057 horses. With many of these stables coach-houses are connected, and, above these, rooms are frequently set apart as dwelling-places. The number of persons residing in these rooms is 901, or about a fortieth part of the whole population of the parish. Of the stable-yards, 9 were defectively paved; 5 had imperfect drainage; 7 were in a dirty condition. Of the stables themselves, 41 were defectively paved; 38 had bad drains; and 41 had no drains at all: 71 stables were in a filthy condition, requiring cleaning and whitewashing; whilst 238 (considerably above half), were imperfectly ventilated. Of the human dwellings above the stables, 30 were badly ventilated: in 33, the effluvium from the stables was complained of. By reference to the Sanitary Inspector's report, it will be seen that altogether 268 nuisances were complained of, and that up to the end of the year, 208 had been removed or abated. This investigation has led to a great improvement in the condition of the stables, which cannot fail to have a beneficial effect not only on the health of the human in-

habitants connected with them, but also on the health of the animals to which they are devoted." While speaking of the parks, and the recreation of the working classes, the medical officer remarks, —"There are no games allowed, and no means of refreshment of any kind exist. A walk in one of our parks is, after all, a dull monotonous affair for a working man, and no wonder that so few are found there. Certain portions of the park should be railed off, so as to allow of cricket and other games,—and in these games we should find at once the means of attraction and relaxation. In most of the parks of continental cities the sale of refreshments is allowed; and if this was done in our own parks, confining the refreshments to tea, coffee, and unfermented beverages, with bread and fruit, I am sure it would be the means of drawing many from the unhealthy atmosphere of the billiard-room and ale-house. Our English notion of the use of a park is too limited."

METHODIST NEW CONNECTION CHAPEL, LEICESTER, COMPETITION.

The successful competitor, in a limited competition, for the above chapel, to be erected in Leicester, is Mr. William Hill, architect, Leeds. The works will be immediately proceeded with under his superintendence.

HEREFORD CLOCK TOWER COMPETITION.

On the 15th, in pursuance of circular, the subscribers of 5*l.* and upwards to the Hereford market improvements and clock tower assembled in the music-room of the Shire-hall, for the purpose of making a selection of designs to be submitted to the Town Council. There was a large attendance. After various statements and propositions, Mr. Anthony read a proposition as follows:—"That this meeting proceed to recommend to the Town Council three designs for a clock tower and three for a clock turret entrance; but that they are of opinion that the Council should not proceed with the erection of a clock until after the old Town-hall has been removed."

This met the views of all parties, and, the other propositions being withdrawn, it was unanimously adopted.

The meeting then proceeded to make a selection, and handed in their voting papers to the mayor. The result was as follows:—

Clock Tower.

No. 39	("Tempus Fugit")	22 votes.
„ 50	("I make aim for the mark"	20 „
„ 41	("Push Forward")	11 „

Market Entrance and Clock Turret.

No. 39	("Tempus Fugit")	29 votes.
„ 56	("Incognito")	5 „
„ 51	("Belvedere")	3 „

Mr. Anthony, on looking at the voting papers, observed to the Mayor that he was surprised to find that many had voted for only one design, whereas he understood they were to vote for three; therefore the numbers were not a fair criterion of the judgment of the meeting.

The Mayor.—Well, it cannot be remedied now.

Mr. Anthony.—No; but I and several others voted for 39 as well as 50, athough we regard 50 as greatly superior to 39: now, had we voted for 50 only, 50 would have had a considerable majority.

More recently the town council have selected for the clock-tower No. 50, "I make aim for the mark," and for the entrance, 39, "Tempus Fugit."

MANUFACTURE OF ORNAMENTAL TILES.

The expense of encaustic tiles stands in the way of their use to any great extent, and we would gladly see it lessened. Messrs. T. & R. Boote, of Burslem, claim to be able, by means of their patent process, to supply patterns intermixed with inlayed tiles "at the same price which is now charged for plain tiles, viz., 6s. per yard;" and that they are able, under their patent, to inlay or imbed the ornament any depth required into the body of the tiles, which precludes the possibility of the ornament wearing off, as is often seen to be the case with pavements not manufactured under this process.

That part of the mould which is to correspond with the ground-work of the article to be manufactured is made to rise by springs or other means above the level of the mould to a distance equal to the depth which it is thought necessary to give to the ornaments. Suitable coloured clay is placed in the sunk or hollow parts of moulds thus formed, and the clay which is to form the body or ground of the article is put in, covering the interior of the mould. The whole is then subjected to the usual pressure, which gradually forces the clay last put in down into the various parts of the mould; and, as the springs yield to the pressure, the body or ground clay is forced closely upon and around the coloured clay, which is thus imbedded in the ground of the article to the same depth as that to which the parts of the mould were raised. The article is then withdrawn from the mould, and presents one smooth surface. Or, instead of the arrangement just described, the parts of the mould corresponding to the ornaments may be raised, and the ground part filled in if preferred.

In some simple specimens which have been forwarded to us, the patterns exhibit great sharpness of outline, and the material appears to be good in texture.

METROPOLITAN WATER SUPPLY.

WATER SPRINGS AT GRAYS.

A pamphlet titled "The Water Springs of Grays,—their capability of affording a supply of pure water to the metropolis,"—by Mr. Meeson, of George-yard, Lombard-street, one of the proprietors of chalk quarries at Grays, is in circulation, with the view of pointing attention to certain springs of good chalk water which issue from these quarries, and require to be constantly pumped away by engines, to the extent of about 2,000,000 gallons a day. This water, it is suggested, would form a desirable supply in the east of the metropolitan district, as at Grays, Purfleet, Rainham, Dagenham, Lilford, Barking, East Ham, Romford, and Brentwood. It is proposed that a company should be formed to carry out the project; and, from estimates given by Messrs. Easton and Amos, it appears that a far larger quantity than two millions of gallons a day is fully calculated on. Mr. Meeson's statements are also corroborated by reports of Messrs. Prestwich, F.R.S., and Dugald Campbell, F.C.S. Mr. Edw. Amos estimates that a supply of 2,000,000 gallons per 12 hours might be ensured upon a capital of 220,000*l.* being expended in machinery and erections; 4,000,000 gallons per 12 hours for 268,000*l.*; and 6,000,000 gallons per 12 hours for 475,000*l.* He anticipates a profit of from 10 to 15 per cent.

TESTIMONIAL TO MR. ROBERT HUNT.

MINERAL STATISTICS.

Recently, at the Mining Record Office, Geological Museum, Jermyn-street, a silver tea and coffee service, of the value of 200 guineas, was presented to Mr. Robert Hunt, by gentlemen interested in the mineral industries of the kingdom. It consists of a silver tea-kettle, lamp, and stand, tea and coffee-pots to match, cream-ewer, sugar-basin, and hot-milk jug, *en suite*, the whole very elaborately engraved and ornamented, and bearing the cipher of the recipient. A handsome silver oval salver, weighing 200 ounces, accompanied the service, and upon it was engraved the following inscription:—

"Presented by the subscribers, who are interested in the Mineral Industries of this Empire, together with a tea service and a purse of sovereigns, to
Robert Hunt, Esq., F.R.S., F.G.S., F.S.S., &c., Keeper of Mining Records,
To record their sense of the energy and ability which he has shown in originating and carrying out the publication of the Mineral Statistics of the United Kingdom, and their admiration of his public character and private worth.
Nil sine magno vita labore dedit mortalibus.
July, 1860."

A purse of 200 guineas also accompanied the testimonial.

Mr. Josiah Berry presented it, with some eulogistic observations.

In the course of his reply, Mr. Hunt said,—When I commenced the work of collecting the Mineral Statistics of the United Kingdom, in 1848, the whole question was of so uncertain a nature, that I then had little hope of advancing it to that condition which has elicited this substantial approval of my labours. I commenced my work with some compilations showing the state of tin and copper mining in Cornwall. It was then extended to the lead mines of the kingdom, at the suggestion, and by the aid of Mr. John Taylor, and eventually enlarged by the recommendation of a Government commission, consisting of Sir Stafford Northcote and Sir Charles Trevelyan, to embrace the coal mines and the iron manufacture of these important islands. I am bound to acknowledge the great assistance which I have received from all parties who are especially interested in our mineral industries. But for this it would have been quite impossible for me to have published annually, as I have now for some years been enabled to do, a volume embracing returns of all the metalliferous minerals and coal raised in Great Britain and Ireland. This inquiry has extended itself to the earthy minerals; and within a few weeks I shall place in the hands of the public a volume of returns, obtained by the Mining Record Office, of the production of clay, the manufacture of bricks, tiles, &c., and of our building and ornamental stones. I have thus sought to render the Mining Record Office, established upon the recommendation of the British Association, as useful as possible to the public. I can point with satisfaction to the collection of records obtained and preserved, showing the extent of our subterranean explorations in many of our most important mining districts.

GLASGOW AND SOCIAL SCIENCE.

The National Association for the Promotion of Social Science will hold its fourth annual meeting in Glasgow, on Monday, the 24th September, and five following days. The Right Hon. Lord Brougham is president; the Lord Provost of Glasgow, Sir Archibald Alison, and the Very Rev. Principal Barclay are vice-presidents. The presidents of department are, the Lord Advocate, Sir James P. Kay Shuttleworth, the Hon. Arthur Kinnaird, M.P., the Viscount Ebrington, and Sir James Emerson Tennent; the general secretary is Mr. George W. Hastings; and the local secretaries are Messrs. W. G. Blackie, Alexander B. M'Grigor, and J. Wyllie Guild.

Our readers will remember that the Association is established to aid the development of social science, and to guide the public mind to the best practical means of promoting the amendment of the law, the advancement of education, the prevention and repression of crime, the reformation of criminals, the adoption of sanitary regulations, and the diffusion of sound principles on all questions of social economy.

The proposed meeting is beginning to have a good effect in Glasgow. In almost every street which had hitherto been obstructed in some way or other, either by a barricade in front of some new building, or embankments of sand and stones consequent on alterations in draining or piping, operations are carried on with an increased energy. In Albion-street the entrance to the city-hall was some time ago rendered more convenient to the public by the demolition of several old houses; and more recently a considerable improvement has been made in Argyle-street by taking away the old-fashioned stairs from the front of the Buck's Head hotel. There is every reason to expect that the meeting will be one of great interest.

MEMORIALS AND STATUES.

The memorial arch to the Royal Engineers at Brompton barracks is now completed, excepting some of the ornamental work. The spandrils and other portions of the arch are carved, some of the designs being copied from works of art met with in the Crimea. The entire work has been constructed by Messrs. Mansfield and Sons, Gray's-inn-road, from the designs of Mr. Digby Wyatt; and the carving and ornamentations are by Mr. Farmer, of Westminster, assisted by some French artists. The iron work has been cast at the foundry of Messrs. Potter, South Molton-street, Oxford-street, the Government giving the captured Russian guns for that purpose.——The statue of Mr. Frank Crossley, M.P., in the People's Park, Halifax, provided by him, at great cost, to the local public, has just been inaugurated. The statue represents Mr. Crossley sitting on a chair or couch, holding in his hand the deed of gift of the park. The pedestal, which is 3 ft. 6 in. high, weighs 34 cwt., and is of Sicilian marble; whilst the figure, which is of pure Carrara marble, is 6 ft. 6 in. high, and weighs 56 cwt. Its cost has been about 1,100*l.* The artist was Mr. Joseph Durham, of London. ——General Jourdan's statue has been placed on the Petit Place du Louvre, opposite the Pont des Arts, at Paris. It is from the chisel of M. Elias Robert, the sculptor of the frontispiece of the Palais de l'Industrie. The statue is of bronze, and is four mètres in height. The general wears the uniform of the first Republic, the mantle being thrown over his left shoulder. The statue is destined for the town of Bourges.——The Prince Regent of Prussia has allotted a sum of 10,000 crowns for the erection of a monument to Goethe, which is to be similar to that now being raised to Schiller.

DRINKING-FOUNTAIN IN THE GREEN PARK, LONDON.

MR. SYDNEY SMIRKE, R.A. ARCHITECT.

DRINKING-FOUNTAIN IN THE GREEN PARK.

The amiable donors of drinking-fountains throughout the kingdom have been so loud in their self-announcement that it is quite agreeable to hear of one erected by a lady who specially stipulates that her name shall not be made public.

The fountain in question is that which has been erected in the Green-park, and is visible from Piccadilly. Annexed is a view of it. As we have already mentioned, it was designed by Mr. Sydney Smirke, R.A., and is executed in Roche Abbey stone, by Messrs. Edwardes, of Newman-street.

It is a triple fountain, comprising three basins and three separate jets. The water is laid on by the Office of Works, the filtering apparatus being under the pavement of Piccadilly.

ART-UNION OF LONDON COMPETITION.

The Council of the Art Union have not considered that the statuettes sent in would justify the award of the prizes offered. They have, however, adjudged the premium of 30 guineas to the group (several figures), "Alfred in the Camp of the Danes." The artist was found to be "Mr. Thomas Duckett, at Mr. Thornycroft's."

The premium of 100 guineas offered for the best set of drawings in illustration of "The Idylls of the King" has been awarded to No. 18, marked "Constancy," subject to a satisfactory reply from the author, (who is understood to be a foreigner,) to certain inquiries.

Nos. 22, 24, and 25, were other favourites.

It is to be hoped that artists will now send their names to be affixed to the designs, which will be open free to the public all next week.

FIRE! FIRE!

Another fire, of wonderful fierceness, has threatened the famous old church of St. Saviour's, in the Borough. Within the memory of those living, the extent and number of fires which have taken place within little more than a stone-throw of this ancient building are surprising. One of these destroyed the nave, and the place has been so beset by fires, that it seems almost as if by a miracle that the remainder of the fabric has been saved.

On the last occasion the West Kent Wharf, a building which extended in one direction 160 feet, in another 80 feet, and a range of older buildings running along the river to the extent of 100 feet, were burnt.

Once set on fire—it is said, by the accidental lighting of some rags—in a short time, in spite of the most vigorous exertions of the firemen, the fire obtained such strength that the whole of the City was lighted up. In vain the steam and other fire-engines threw vast quantities of water: the fire raged and roared in a manner which will not readily be forgotten by those who witnessed it and in a few hours property of the value of probably not less than 200,000*l.* was destroyed.

Shortly after this calamity, another fire, also very destructive in its effects, took place in the Phœnix Mills, when a large stock of manufactured food, ready for exportation to the troops in China, was burnt.

The frequent occurrence of fires in the metropolis; the completeness, when the fire has once obtained any footing, of the destruction; the value of the goods and property annually consumed, give these disasters great importance, and show that measures more adequate than those which have hitherto been taken should be employed for the purpose of rendering safer the national wealth. Such burnings are a loss not only to individuals, but to the whole community.

Notwithstanding the numerous warnings, modern buildings are put up little if in any way different from those which have been burnt. Of late, by means of party-walls and the exertions of the firemen, fires are mainly kept within the extent of particular premises. In the case of warehouses, such is the nature of their construction, and so great is the size of the area which is undivided by walls, that, in nine cases out of ten, when a fire has established itself, it is impossible to prevent the destruction of the premises.

If, in the arrangement of warehouses, &c., the area within the outer walls were properly subdivided by other walls, of sufficient strength to stop the progress of fire, and the area was of such a size that only a moderate amount of flame could be produced, the firemen would be able to operate with more certain effect. The requirements of the Building Act, with this end in view, have been set aside by the decisions of magistrates.

At Messrs. Maudslay & Field's works, as we have before noticed, the place is divided by walls, and the doors are of thick metal: besides, there is a regularly organized band of firemen, composed of the workmen who live near: pipes of large diameter are also carried throughout, from which, at a moment's notice, a great quantity of water can be poured on any part. At the General Post Office the waterpipes are laid in all quarters: besides, there are in all the passages buckets and other means of quenching fire provided. There is also a regular attendance of firemen in the building.

At the Earl of Salisbury's, Hatfield House, since a fire which took place there a few years ago, water-tanks of large size have been placed on the roof, and such other arrangements made, that this stately abode is now comparatively safe. If proper provision were made in the first instance in warehouses and manufactories, a great annual saving would be the consequence. They should be built with little that could burn. If the cost were more, it would be a saving in the long run. We cannot but look with dread to several places in the metropolis in which are articles of priceless value; and it would be well to make a careful inquiry if the best arrangements which experience could point out have been made to prevent loss. The probates of wills, the loss of which would cause endless litigation and confusion, are at any moment in danger from fire. To what extent are the King's Library and some other parts of the British Museum safe? Underneath St. Paul's Cathedral there is a large collection of seats and other woodwork; and if, by any accident with the gas or warming apparatus, it were to take fire, a great flame would be the result. Probably, however, the vaulting would prevent it from spreading to other parts.

Gas-lighting has been introduced into Westminster Abbey. The pipes are carried amongst the carved stalls and woodwork. Are the arrangements now made, to quench a sudden fire in this invaluable relic of times gone by, sufficient and satisfactory?

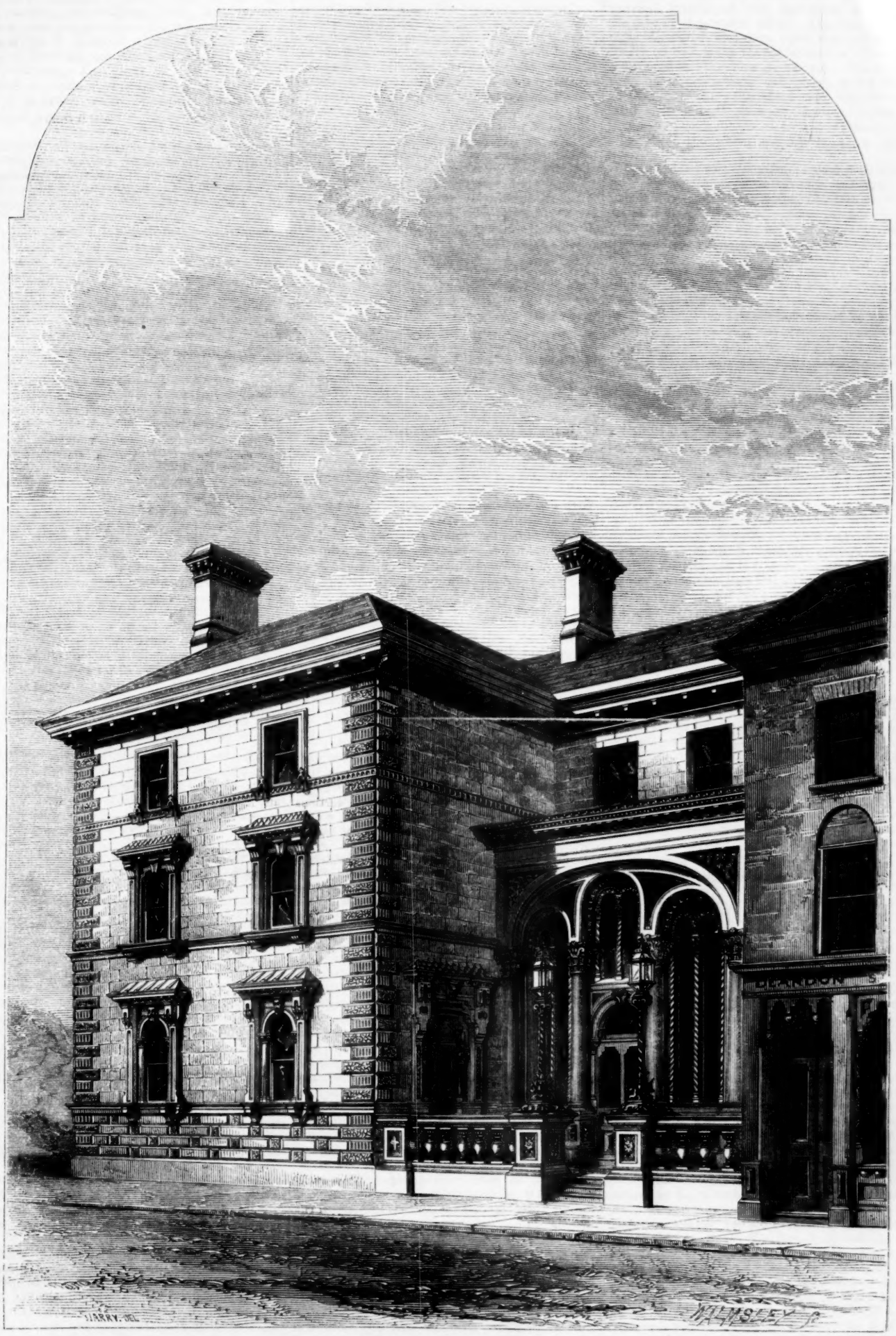
There are many other places which might be mentioned. In some of the larger town houses there are rare and invaluable works of art. In these buildings fires are liable to happen, which, before the arrival of the brigade engines, might cause serious damage. The most careful arrangements should be made to prevent such a possibility.

It is to be hoped that the subject will meet with the attention which its great importance demands. In considering the question, the introduction of large quantities of inflammable materials into great cities should not be overlooked. In some warehouses, even in the docks, saltpetre is stored with materials likely to produce spontaneous combustion. Rags and greasy matters are not far from each other; and naphtha, spirit of turpentine, and other dangerous compounds are brought *ad libitum* into the midst of populous neighbourhoods.

The cause of all fires in large towns should be fully inquired into, with the view of preventing the waste which is caused by the frequent conflagrations which now disgrace and damage us.

MESSRS. WRIGHT'S BANK, NOTTINGHAM.

Our engraving illustrates the banking-house, which has been erected for Messrs. J. C. & J. Wright, in Carlton-street, Nottingham, under the superintendence of Mr. Charles H. Edwards, of London, architect. The front, immediately in connection with the banking-room, is entirely of stone, comprising one large window divided by stone columns, whose proportions and mouldings throughout, with the entablature, are of the Corinthian order, excepting that natural foliage is given for the caps and mouldings, in lieu of that commonly used. These columns stand upon pedestals, forming the base of this front, with moulded caps and bases having large groups of natural foliage carved in each panel. The entablature is adorned with the leaves of trees and flowers. The entrance to the banking-room is in the centre of this front, having two large double lights on either side, with smaller columns of serpentine marble with stone carved caps and bases of natural foliage supporting a circular head, the crest of the firm being carved on and forming the key-stone, above which is a moulded cornice. The glazed windows have mullions formed by twisted columns with floriated caps and bases, all of iron. The other portions of the façade of this building, comprising the manager's-room, &c., are faced with Portland cement; the ground-floor windows having columns circular on plan at top, and octagonal at bottom, whose caps and bases are also foliated, and which rest upon a moulded string. In the circular heads, and also the strings, encaustic tiles are introduced, and the whole is crowned with a moulded and foliated cornice, supported by double-moulded cantilevers. The walls of the interior of the bank are of rough stucco, having a dado with moulded capping, neck, and base, of polished marble cement. The ornamental architraves to the doors and windows are also of polished marble cement. The ceiling is coved, and divided into panels by ribs, at whose intersections are introduced foliated and moulded drops, the panels throughout being filled with foliated work in high relief. The counter is of oak, divided into panels. The top of the counter is of glass, divided into spaces by brass beading. The gas-fittings throughout are of foliated bronze work, made by Messrs. Tomason, of Birmingham. The floors are of Maws & Bales's tesselated pavement amalgamated. The ironwork is by Messrs. Gilbert & Frasi, Golden-lane, Barbican. The ceiling is of papier maché and carton pierre, executed and fixed by Messrs. White & Parlby, of Great Marylebone-street, London. The whole of the works have been contracted for and executed by Messrs. Evans, Brothers, of Whitecross-street, London, at a cost of 3,000*l.*



MESSRS. WRIGHT'S BANK, NOTTINGHAM.——Mr. C. H. Edwards, Architect.

PROVINCIAL NEWS.

Welbeck Abbey.—A costly range of stabling, coach-houses, fowl-buildings, dairy, laundry, hot-houses, pine-pits, and other offices is now in course of erection at Welbeck Abbey, the seat of the Duke of Portland, at a cost of nearly 100,000*l.*

Trowbridge.—The Lord of the Manor has decided to erect a commodious market-house in this town, and it will be commenced immediately. Mr. C. E. Davis, F.S.A., of Bath, is the architect; and Mr. W. Long, of Bradford, has contracted for the masonry work; Messrs. Davis, of Frome, for the carpentering; Mr. Berry, of Trowbridge, for the plumbing, glazing, and painting; Mr. Harris, for the slating, plastering, &c.; and Messrs. Davis & Son, for the iron work. The building will be about 144 feet in length and 80 feet in width, with a frontage of 100 feet, and a considerable elevation. The roof will be of iron frames with a large area of glass, supported by iron pillars similar to the Salisbury market-house.

King's Weare.—The prospectus of the South Devon Hotel Company, with a capital of 50,000*l.*, in shares of 5*l.* each, has been issued, the object being to establish a first-class hotel on the King's Weare side of the river Dart, a picturesque locality in South Devon, favourably spoken of by Sir James Clark in his work "On Climate." The directors have entered into a contract with the proprietor of the Brookhill estate for a seventy years' lease of the mansion and grounds, with the option of purchasing the freehold. It is proposed to enlarge the mansion, so that it may contain 150 guests' bed-rooms, and 100 other rooms, including dining saloons, ladies' coffee-room, library, ball and billiard rooms. The cost of the alterations has been estimated at 22,000*l.* by a builder, who is willing to contract for the construction of the hotel for that sum; and the whole cost, including every necessary building, is estimated not to exceed 44,000*l.* The estate is said to be conveniently situated for railway and river carriage.

Devonport.—At the monthly meeting of the Devonport Board of Surveyors, five tenders were opened, responding to an advertisement for the widening and other alterations of the Rectory Bridge, at the bottom of the parsonage field, near the Rectory. The tenders were:—

S. Hallett	£87 18 3
T. Perkins	69 0 0
Joseph Dyer	64 19 0
Symons & Hoskings	63 15 0
W. Smith	56 10 0

Merthyr Tydvil.—Subscriptions to the amount of 1,150*l.* were collected at the first committee meeting towards erecting the new Town-hall. The Treasury have since promised 2,000*l.*, so that it only remains to raise the remaining 1,000*l.* to realize the amount originally named as being sufficient for the purpose. It is arranged to provide rooms for the Library in connection with the Hall.

Northallerton.—The late Mr. Adam F. Weston, of Bombay, has left a bequest of 150,000*l.* to the town of Northallerton, Yorkshire, of which he was a native. The object is to form a botanical museum for the northern counties.

Middlesbro'.—The foundation-stone of the new North Riding Infirmary, at Middlesbro', has been laid with masonic honours, by the Earl of Zetland, grand master of the order of Freemasons. The entire cost of the building is computed at between 3,000*l.* and 4,000*l.* The site has been granted by Mr. Hustler, of Acklam Hall. In competition twenty-eight designs were sent in, and the plan of Messrs. Oliver & Lamb, of Newcastle, architects, having been selected as the most suitable, that firm was engaged to superintend the erection of the building in accordance with their design. The arrangement of the plan is that of two corridors, open at the ends, of the shape of an inverted T, with wings at each end. The principal wards are designed to hold ten patients each, and the smaller wards four each, 2,000 cubic feet of air being allowed to each patient. The windows are to be placed opposite to each other, with single beds between. The wards will be 16 feet in height, and the building, it is asserted, will be ventilated throughout by natural means, as recommended by the Crimean Commissioners and Miss Nightingale. In every ward there are to be two large open fireplaces. The wards will face the north-east. The style of architecture will be Italian, and the structure will be of brick, with stone dressings. The house for the matron, surgeon, &c., will be placed in the centre of the corridor, parallel with the road. The operating-room, with a ward for the reception of patients after operations are performed, will be in the middle of the cross aisle, and the extension wards are intended to be built at the end of the cross corridor. The present buildings will comprise the erection of wards and accommodation for forty patients, out-door dispensary, and surgeon's and matron's apartments. The building, however, will be so arranged that it can be extended so as to accommodate 120 patients, the maximum number, and the infirmary then will be 200 feet in length.

Sedgefield (*Durham*).—The tender of Mr. Barton, builder, Hartlepool, has been accepted for the erection of Sedgefield Union new workhouse, at a cost of 1,975*l.*

Tynemouth.—The first contract for the extensive buildings now being carried out for the "Tynemouth Promenade and Assembly Room Company" in this rising watering-place has just been completed and inaugurated by a banquet held in the new ball-room. The block consists of an hotel, and, connected with it by a covered arcade, a range of building, containing the ball-room, reading-room, and billiard-rooms, and a ladies' saloon, with washing-rooms, cloak-rooms, &c. The ball-room is 70 feet long, separated from the ladies' saloon by folding-doors, which, when drawn back, make the ball-room in all 100 feet long. Both rooms are ornamented. The ceilings are divided by curved and moulded beams, with metal scroll-work in the spandrils, and subdivided again into a fretwork of smaller geometrical panels, filled in with fruit and flowers, &c. The rooms are lighted by a chandelier in the saloon, and sunlights hung with crystal pendants, supplied by Messrs. Faraday, of London. Staining and varnishing have been adopted throughout, instead of painting. The principal entrance from the arcade is laid with Maw's encaustic tiles. Underneath the ball-room there is a supper-room of the same size, and on the upper story a suite of sitting and bed rooms, both the lower and upper story being in immediate connection with the hotel. The buildings are carried out in moulded and coloured brick-work, partaking of the character of the brick buildings of Northern Italy, and the internal fittings and decoration are designed in the same style. The architect is Mr. Archibald M. Dunn, of Newcastle. The contractors are Messrs. Wait & Howard, of Newcastle, who have taken the contract for the second block of buildings connected with the scheme, consisting of a range of shops and houses in the front street, with the completion of the arcade, &c.

CHURCH-BUILDING NEWS.

The Hemans Window. — By a slip, recently, the window by Mr. Warrington, put up in memory of Mrs. Hemans, the poetess, was said to be in Glasgow. It is in St. Anne's Church, Dublin.

Nocton.—The foundation-stone of the new church at Nocton, says the *Lincolnshire Chronicle*, will, it is expected, be laid in a few days. A limited number of builders were some time ago requested to send in tenders for the performance of the necessary work, which were opened on Saturday before last. The one submitted by Mr. W. Huddleston, of Lincoln, which amounted to between 5,000*l.* and 6,000*l.*, was accepted. The architect is Mr. Scott.

Oakham (*Rutland*).—Oakham Cemetery was consecrated on the 2nd of August, by the Bishop of Peterborough. It is situated a short distance from the town, and is 4½ acres in extent. The chapels are approached by a carriage-drive in the centre of the ground, and are midway from back to front. The external walling is executed in dark rubble stone with Bath stone dressings. The chapels are placed with their sides parallel to each other, having the vestries and an open carriage-drive between them. Over this carriage-drive is a groined roof, and tower and spire. At the angles of the tower and chapels there are angle buttresses, with carved and crocketed pinnacles. The gables have perforated ornamental parapets carried out in the Early Decorated style of architecture. The chapels have been executed from drawings prepared by Messrs. Bellamy & Hardy, of Lincoln, architects, and executed by Mr. Robert Young, of Lincoln, contractor. Mr. Thomas Barlow, of Oakham, acted as clerk of the works.

Moggerhanger.—St. John's Church, Moggerhanger, has been consecrated. The architect was Mr. Slater, of London; and Mr. Conquest, of Kempston, was the builder. It is of Kempston stone, varied with red sandstone from the quarries at Silsoe. The cost has been defrayed by Mrs. Dawkins, of Moggerhanger House, as a memorial to her late husband, the Rev. E. H. Dawkins, whose remains lie under a brass monument in the chancel. She has also given a large burial-ground fenced by a stone wall, and is building a parsonage adjoining. The edifice, according to the *Bedford Times*, consists of a nave and aisles, central tower, and chancel with an apsidal end. The pillars are of Ancaster stone with carved capitals: the arcades are of the same material, intermixed with Harlestone stone for the sake of variety and effect. The apse is of a more decorated character than the rest of the church, as containing the mausoleum in which the remains of Mr. Dawkins are to rest. The roof is open, and constructed of oak grown on the Moggerhanger estate. The three east windows are filled with stained glass (by Messrs. Clayton & Bell, of London), the centre being the Crucifixion, with the Resurrection and Ascension on either side.

Llandaff.—From the annual report with reference to the restoration of the cathedral of Llandaff, it appears that during the past year the nave has been covered with green Bangor slates, in place of lead, the side aisles of the once ruined portion of the building are being roofed with lead, the windows glazed, and temporary doors provided, so that the whole fabric will soon be covered and enclosed: and it is hoped that ere long the wall which still divides the two sections of the nave, and which is now the last relic of the hideous attempt at restoration in 1752, will be removed, and an uninterrupted view afforded from the western to the eastern end of the cathedral. The floor, however, has yet to be laid, suitable doors provided, and some means adopted for heating this large additional area for the comfort of the congregation. A special fund has been opened for the purchase of an organ, which it is estimated will cost from 800*l.* to 1,000*l.* The bishop's throne and the stalls are in progress of construction; but there is still very much to be done in the work of restoration. The eastern portion of the side aisles require the re-construction of their roofs and the relaying of the floor with encaustic tiles, while there are many other objects which bespeak attention, such as the repair of the monuments, the perforated parapet for the northern tower, the provision of a suitable font and lectern, the substitution of painted windows for those of ordinary glass, and the restoration of the southern tower.

New Basford.—St. Augustine's Church has been opened for divine service. The edifice is built of brick and stone in the Decorated style. There is a small tower, with a spired roof of stone surmounted by a stone cross. The east window is adorned at the summit with a vine and grapes, a crowned head of the Queen, and the head of a bishop mitred, carved in stone. The two next windows (those of the vestry) on the south side have two human heads with a winged dragon in stone. Other carved heads and nondescript animals also decorate the exterior of the edifice. The archway of the western porch is carved, so as to have a lace-like appearance, and rests upon two pillars, the capitals being of carved foliage. All of the windows are of stained glass. Those of the nave are blue cathedral glass. The pulpit is of carved stone. The entrance to the chancel is through an ornamental arch in a carved screen, with metal gates, partly gilt and painted. Over the chancel screen are angels, animals, fruit, foliage, &c., carved in stone. Mr. Arthur Wilson, of Nottingham, was the architect.

Stanton (*Derbyshire*).—Stanton church was re-opened on the 11th of July, having undergone a partial restoration, consisting chiefly in removing the inconvenient and unsightly square pews and west gallery, which blocked up the lower arch, taking away a singular wooden division between the nave and chancel, and the very unsuitable communion rail. The whole available space for the congregation has been fitted up with open benches, stained and varnished; a new pulpit, desk, communion rail, chancel door, &c., have also been added; the whole of the aisle and floors relaid with Staffordshire tiles in alternate red and black; the corbels of the tower arch replaced by new ones (the old having been cut away for the convenience of gallery occupants); and a new chancel arch and wall with buttress has been introduced at its intersection with the nave. A memorial window has been placed in the south side of the chancel by the Rev. S. Eversfield, the present curate, to the memory of his mother, and the nave also contains a window in memory of the late Earl Stanhope, given by the present rector. The work has been executed from designs and under the superintendence of Mr. R. Barber, of Eastwood, architect. The contractors were Messrs. Kerry & Allen, of Smalley. The heating apparatus is by Mr. Mitchell, of Leamington. The whole available space for the congregation has been filled up with open pine seats, stained and varnished, and accommodation is now furnished for 100 more than could be seated previously. The work has been executed at a cost of 360*l.* Mr. Howard, the rector, has been at the sole ex-

pense of the works in the chancel, but the Earl Stanhope was the largest contributor to the general restoration.

King's Heath (Birmingham).—A new church has been consecrated at the village of King's Heath by the Bishop of Worcester. The church, which has received the name of All Saints', has been built from designs of Mr. Frederick Preedy, of London, architect, in the early Decorated style, and consists of a nave, chancel, and vestry. At present there is but one aisle, though the plan will allow of the erection of the corresponding aisle when circumstances may require it. The tower is also intended to carry a lofty spire of stone-work, and this is much needed to complete the uniformity of the structure. The roof is open-timbered, stained, and varnished. In the interior the arches are constructed of Bath and Bromsgrove stone in alternate bands. The church contains 430 sittings. The contractor was Mr. Isaac Clulee, of King's Norton.

Epworth.—The New Methodist New Connection Chapel was opened on the 25th ult. It is called the Kilham memorial chapel, and is built on a site in the centre of the town, of about 1,500 square yards in area. The style is Decorated, modified to suit requirements. The building is about 55 feet high to the apex in front. The plan is a parallelogram, 62 feet by 30 feet. The seats are arranged in three blocks, approached by two side aisles running the entire length of the building. The main entrance is by a porch on the south front, and forms a prominent feature, projecting several feet from the face of the building. On each side of the porch are small windows, over which a string course is placed, directly above which are two large windows filled with tracery, and over these springs a relieving arch encircling a large stone containing a band, on which is an inscription. The gables are surmounted with stone terminals, and the apex with a gilt cross about 6 feet high. The chapel has a very high-pitched roof, surmounted with an ornamental ridge-cresting. In the interior the roof is open to the tie, and ceiled about 30 feet high, so as to appear octangular in form, and the bays are divided by circular trusses. The pulpit, which is of stone, is semi-octagonal, with moulded cap and base. The new school is similar in design to the chapel: it has a porch, and open timber roof of light and simple character. There is also a superintendent's room and library. The total cost, including land, chapel, and school, will exceed 1,600*l.* The architects are Messrs. R. C. Sutton & H. Paull, of Nottingham, the work being carried out under the superintendence of Mr. Sutton. The contractor for the chapel was Mr. G. Hall, of Nottingham, and for the school Mr. Henry Kelsey, of Epworth; and Mr. J. T. Cockayne, of Nottingham, undertook the stonework for both buildings.

Hulme.—The new church of St. Philip is now nearly completed. The church stands at the corner of Chester-street and Newcastle-street, Hulme, and is built of Peel stone, in the Gothic Geometric Decorated style of architecture, from designs by Messrs. Shellard & Brown, architects, Manchester. It consists, according to the local *Advertiser*, of a nave with side aisles, and a chancel with a north side aisle. The tower, with spire, stands at the corner, and fronts both Chester and Newcastle-street, and by its breadth the north aisle of the nave is shorter than that of the south side. The total length of the church, internally, is 117 feet 10 inches; the width, 50 feet 2 inches. From the floor to the ridge of the roof of the nave the height is 54 feet. The tower, with its spire (which is crowned with a vane), is 155 feet 3 inches high. The seats are open benches, and free to all comers, the accommodation being for 670 adults. The principal front of the church is that in Chester-street. The chancel, nave, and aisles, are paved with Maw & Co.'s red and black ornamental tiles. The roof is open timber work, and, like the benches, is stained to imitate oak. The covering is of Welsh slates. Messrs. Ellis & Hinchcliff have done the masons' work; and Messrs. Boden, Edwards, & Foster, the brick and joiners' work, &c. The gas-fittings, by Messrs. Thomason & Co., of Birmingham, are in design Gothic; and the organ is being built by Messrs. Eccleston & Bowles, of Manchester. All the windows are to be filled with stained glass by Messrs. R. B. Edmundson & Son. The principal chancel window is completed, and has been on exhibition at Messrs. Edmundson's gallery. It is 24 feet by 12½ feet. The three centre lights have for their subject the "Ascension." The light on the right, looking at the window, has for its subjects "St. James the Minor" and the "Last Supper," while the outer light on the left, looking at the window, contains "St. Philip" and "Christ Feeding the Five Thousand." The tracery is filled with the subject of the "Pentecost;" the figures having tongues of fire upon their heads. When completed, the edifice will have cost upwards of 7,000*l.*, nearly all subscribed by the Birley family of Manchester. The incumbent will be the Rev. Robert Birley. On the south side of the church, and fronting Newcastle-street, a parsonage is now in course of erection. The schools belonging to and adjoining the church have been completed some months since, and they will accommodate about 400 children.

Prestwich.—The Prestwich parish church has recently been repaired and partially restored. The repairs, &c., have been executed from designs by, and under the superintendence of, Messrs. Travis & Mangnall, architects. The nave and aisles have been repewed, the pews being open and of oak, with carved ends. The stonework round the windows has been redressed, and the windows filled in with diamond quarries, and finished with a coloured margin. The walls and piers have been replastered, and the whole of the nave and chancel ceilings have been repainted and redecorated. The panels of the ceiling are powdered with gilt stars and the Tudor rose (red and white), and the beams have upon them imitation diaper work in party colours. The restorations are not quite complete as yet. In the autumn of the present year it is proposed to fill in the chancel end window with stained glass, to the memory of the late Countess of Wilton. The window is to be the work of Messrs. Ward & Hughes, of London. The design contains seven lights (being the number in the present window), the three centre ones being filled with "The Crucifixion," Christ in the middle, with the thieves on his right and left; while the two outer lights on either side have for their subjects the six acts of Mercy, "Feed my Lambs," and the "Good Samaritan." The tracery is filled in with attending angels.

Kilmore Cathedral.—The windows in the south transept, we are now informed, were executed by Messrs. Ward & Hughes.

SCHOOL-BUILDING NEWS.

Shrewsbury.—The opening of St. Chad's Schools has just taken place. According to the local *Chronicle*, the total cost of the buildings exceeds 3,150*l.* The architect was Mr. E. Haycock, of Shrewsbury, and the contractor, Mr. J. Treasure, of Newport. The buildings are of Elizabethan character, and constructed of brick, with Grinshill stone dressings. The east end is surmounted by a bell-turret and cross of free stone. The roofs are covered with blue tiles, and ornamental ridge, roll, cress-troughing, and down pipes. All the walls are plastered internally, with the exception of the lavatories, which are whitewashed. The master's house is situate about 22 yards from the street, with boys' play-ground in front, 52 feet long by 26 feet wide. The boys' school is 65 feet long by 18 feet wide, and 14 feet high from floor to ceiling. The class-room is entered from the school-room, and of the same height as the school, 18 feet long by 14 feet wide, fitted with seats on raised platforms. There are foul-air extracting flues formed in the walls, and ventilating grates in the floors. The floor of each school is laid with red-deal boards, with air-space to the depth of 3 feet: there is also an open fireplace, with stone chimney-piece. To the upper school adjoining the master's house is the boys' entrance-porch, from which you enter the boys' school and lavatory. The girls' school is entered by the end of the mistress's house, up a flight of Yorkshire stone steps. The school and class-room are the same size as the boys', and similarly fitted up: the roof of the school and class-room is an open-timbered one, constructed with framed and stop chamfered circular principals and purlins, plastered between the rafters, stained and varnished, with louvres in the gables. The mistress's house is next the street. The girls' play-ground is in front of the schools, and is 66 feet long and 32 feet wide. The boundary-wall is built of pressed brick and Grinshill free-stone coping, gate piers with a single cast-iron gate for mistress's and girls' entrance, a cast-iron double gate for boys' entrance, and cast-iron ornamental railing leaded to same coping.——The new schools, at St. George's, or Pain's-lane, near Oakengates, have also been opened. Earl Granville, who is the principal proprietor in the Lilleshall iron works there, was present, and delivered the inaugural address. The schools have been in course of construction eleven months, and cover one acre of ground. The establishment includes boys' school, girls' school, lavatories, and two residences—one for the master and the other for the mistress. The design was by Mr. Henry Clutton, of London; Mr. Millington, of the Steam Saw-Mills, Oakengates, being the contractor; whilst the works have been carried on under the superintendence of Mr. John Jones. The general tone of architecture is Gothic, the schools being made with open roofs and lancet arches. The length of each of the schools for boys and girls is 55 feet, or, including the passage, 61 feet 6 inches. The infant school is 42 feet long; the three being respectively 18 feet wide. The contract for construction was 2,000*l.*

Leeds.—St. Stephen's National Schools, Burmantofts, have just been opened. The new schools are erected on a triangular piece of land on the north-west side of the church. The buildings consist of two school-rooms, one for boys and one for girls; a sliding screen being placed between the two schools, so that the two rooms can be thrown together for meetings. Each school has a separate entrance porch, fitted up with lavatories. The size of the school-rooms is 36 feet 6 inches by 18 feet 6 inches, and 26 feet by 18 feet 6 inches, and they afford accommodation for 248 children. The rooms are 18 feet 6 inches high to the ceiling, and 13 feet 6 inches to the wall plate. The class-rooms are 20 feet by 14 feet, and fitted up with galleries, and the same height as the schools. The play-grounds and out-buildings are provided at the back of the schools. The building is in the Decorated style of architecture. The principal front facing Accommodation-road combines a centre and two wings. There is also a bell-turret. The cost of the schools, boundary walls and out-buildings is about 1,200*l.*, towards which, we understand, the Committee of Council on Education have made a grant of 559*l.* The schools have been erected from the designs of Messrs. Dobson & Chorley, of Leeds, architects. The contractors for the various works were—masons' work, John Holdsworth; carpenters' work, Charles Dalton; plumbers' work, Messrs. Braithwaite & Myers; plasterers' work, Mr. W. H. Barker; slaters' work, Mr. S. Croft; painters' work, Messrs. Wood & Son; and iron-founders' work, Mr. Green.

ECCLESIOLOGICAL SOCIETY.

At a committee meeting held August 1st, amongst other business, Mr. Burges laid before the committee his designs for a small brick church to be built at Fleet, in Surrey. He also described the original purpose of the Maison Dieu, at Dover, and the history of the building, which, after many alterations and mutilations, has been lately repaired, and to some extent restored. Referring, also, to the Liberate Rolls of Henry III., Mr. Burges discussed several questions connected with Mediæval domestic architecture, and in particular called attention to the fact that although pine timber was often used in the Middle Ages, no works in that material of that date remained, whence he inferred that our present use of pine, instead of oak and chestnut, in church roofs, was a mistake, inasmuch as it was not likely to last for many years.

Mr. Prichard, Mr. White, and others submitted designs for works in hand.

The committee, having considered the following extract from a letter from Mr. Robson, agreed that it was impossible to lay down a general rule for such cases, but that it was a right principle to preserve, as far as possible, what was good in itself, or historically valuable, or not plainly incongruous with the rest of a building. The particular case at Durham might depend on the nature of the inserted tracery, and on the extent to which the restoration of the other windows had already proceeded.

"I wish to consult you upon the question of restoring First or Second Pointed tracery when inserted in Norman windows. In Durham Cathedral, all the windows on the north and south sides of the nave have had the tracery which formerly filled them removed, before I had any connection with the building. There are, however, yet remaining two or three windows in which the tracery (placed there by the architects of the end of the thirteenth and beginning of the fourteenth century), has escaped, but has recently attracted the attention of the dean and chapter, who propose to take it out as inharmonious.

I have given it as my opinion that *preservation*, not 'restoration,' should be our object, and that there is at present no ground for destroying the tracery.

But I should very much like to know your views on the question in general, for it is one of no little difficulty. Did the Mediæval architects insert it to give a richness to the otherwise bare Norman window? Or did they do so for constructional or glazing purposes? I think the former, and that we, so far from straining after a 'purity of style,' which they despised to some extent, should even restore First and Second Pointed tracery in Norman windows."

Mr. Clarke having described the present state of the proposed fund for endowing a Travelling Studentship in memory of Augustus Pugin, it was agreed, at the suggestion of Mr. Beresford Hope, that the small balance (of 3*l.* 3s. 6d.) remaining

from the Carpenter Memorial Fund might most properly be devoted to the Pugin Fund.

Mr. W. J. Hopkins, of Worcester, wrote to say that there was now every hope of the preservation of the Guesten Hall, but that funds were urgently needed for its substantial repair.

THE COST OF CRIME.

Amongst the estimates granted by Parliament during the present session, we notice the following items in connection with the suppression of crime:—

For convict establishments at home	£368,329
Inspectors of prisons (United Kingdom)	17,000
For the maintenance of prisoners in county gaols, reformatory institutions, and the removal of convicts	159,367
For the transportation of convicts.....	20,671
For convict establishments in the colonies	173,000
For salaries, &c., of the metropolitan police	21,437
A further grant for ditto	136,860
For police, — England, Wales, and Scotland	223,000
Expense of prosecutions at assizes and quarter sessions	100,000
Criminal prosecutions in Ireland	64,634
Criminal prosecutions carried on by the authority of the Lord Advocate.....	5,500
	£1,289,798

One million two hundred and eighty-nine thousand seven hundred and ninety-eight pounds! And this is only a part of the formidable account, to which must be added the cost of private prosecutions, the county and other rates for prisons, police, &c., to say nothing of the amount of plunder and the waste of time which might have been devoted to profitable labour! Gradually, it may be hoped, we shall learn how to prevent rather than to punish, and so save part of this frightful expenditure. Schools are cheaper than prisons.

AMUSEMENTS.

Floral Hall, Covent-garden.—The music-loving public left in town have reason to thank Mr. Alfred Mellon for his promenade concerts at this time of the year, when comparatively little is going on. In conjunction with Prince George Galitzin, a *great* Russian composer and conductor,—in one sense at any rate,—he provides each night a very admirable entertainment, a little less lively, perhaps, than was had from Jullien, but more sound. An excellent band, with Miss Parepa, Miss Augusta Thompson, and Mr. Wilbye Cooper, as vocalists, will surely give a good shilling's worth. The building appears to be exceedingly well adapted for musical performances.

St. James's Theatre.—Mr. Barry Sullivan, who has been absent from this country for several years, has improved with time, and is not to be disregarded. He has played *Hamlet* and *Richelieu*, and is very well received. Mr. Planché's *Fortunio* has been revived, and is found as sparkling as ever.

The Alhambra.—Mr. E. T. Smith has added, to the horse-riding and gymnastic attractions here, a live hippopotamus, docile as a cat and uglier than a pig. It opens its monstrous jaws to receive its Arab keeper's head, and does not snap it off; and it obeys its master, and ultimately rides off with him in an unnatural and altogether delightful manner. The Brothers Berri are remarkable performers on the flying cord. Horse-riding is looking for its Luther.

ART AND SCIENCE IN THE COMMONS.

The National Gallery, the Kensington Museum, the British Museum, and the Gallery of Historical Portraits, have been the subjects of a good deal of talk in the Commons this last week or two, mainly on questions of supply.

On the vote of 15,000*l.*, granted, after much discussion, and by a small majority of eight, or thirty-one to twenty-three, for National Gallery improvements, it was explained by Mr. Cowper and Lord Palmerston that the purpose of asking for this sum of money was, that the hall of the Gallery might be "decked over," in order to provide a spacious saloon, 75 feet by 40 feet, and 35 feet high, giving an additional space of 3,000 feet superficial for pictures, besides a new room of nearly the same size, on the ground-floor, for sculpture. It was also explained that when the Royal Academy was removed, a new staircase would be made and the entrance greatly improved. The removal of the screen dividing the Gallery from the Academy was also alluded to, and the formation of a new façade at the back, the workhouse being removed, was spoken of by Mr. Cowper as a possible though distantly future contingency.

On the vote of 17,000*l.* for the Kensington Museum, also granted, it was explained by Mr. Lowe that the present iron building was cold and damp, and therefore injurious to the articles placed in it, and that the object of the present vote was to enable the Government to cover in a space, and to remove the collection contained in the iron building into the building so formed. Mr. Coningham said he believed this vote was a mere drop in an ocean, and that it was intended to enter upon an enormous expenditure at South Kensington.

The vote granted for the British Museum was 80,000*l.* Several members urged the opening of the Museum to the public in the evenings, and others spoke a good word for the officers as to increase of salary, at present under consideration of the Treasury. The Chancellor of the Exchequer, while expressing his regret that the Government had been unable to make better use of the site of Burlington House, said it was "owing to the wretchedly inefficient management of our public works, which was marked by vacillation, indecision, niggardliness, extravagance, and every opposite vice. There was no absolute authority, and there was a consequent waste of public money. He should not be sorry to see some sort of revolution overtake this department, for he despaired of ever seeing it brought into proper order by any other means."

On the vote of 2,000*l.* granted for the British Historical Portrait Gallery, Mr. Coningham objected strongly to such a multiplication of establishments, and said this Gallery was another instance in support of the opinion expressed by a great orator that the administration of this country in respect of its art-establishments was marked by "vacillation, uncertainty, costliness, extravagance, meanness, and all the conflicting vices that could be enumerated." The purchase of the portraits of eminent persons was an object well worthy of a national institution, and one from which he could not dissent. But he did not like the appointment of virtually irresponsible trustees, and he thought there ought to be some means of testing the purchases which were made. —Sir G. C. Lewis defended the purchasing committee, stating that an immense amount of peculiar knowledge, historical and otherwise, was required for the selection of such portraits, and was possessed by the committee, one of whom was Mr. Carpenter, the custodian of engravings at the British Museum.

A question was asked by Sir W. Gallwey, as to the ruinous state of things in Victoria-street, a site which he said, "presented a scene of ruin and desolation a parallel to which in so conspicuous a position could not be found in any capital of the world. Here were plots of ground the selling price of which, if a title could be made to them, would be their weight in gold, but which were now the receptacles of the filth of the neighbourhood, and the resort of the vice that existed around." —Mr. Cowper said he agreed with the hon. baronet that the present condition of Victoria-street was a most lamentable indication of the mismanagement and misconduct of the building society called the Westminster Improvement Commission; but the Government had nothing at all to do with the matter. If there were good grounds for appointing a committee, he (Mr. Cowper) for one should not feel disposed to offer any objection to it.

The discussions on art-matters in the House of Commons are seldom very creditable to that body.

THE MASONS' STRIKE.

The following circular has been issued in connection with the dispute in Leeds:—

Observing that the operative masons in Leeds challenge their employers to a public discussion of the differences which caused the present strike, we think it desirable, while respectfully declining such a challenge, to lay before the public a statement of the case, which we conceive will answer the purpose without the excitement of the disputation sought for by the men.

In March last the masons sent to their employers a "memorial," asking for an advance of wages at the rate of 1s. per week, and that the rules drawn up by themselves should be signed by the masters. After careful consideration it was unanimously resolved to give the additional shilling per week, but that the hours of labour and the customs of the trade should not be disturbed. The advance was taken by the men, and it was believed that other demands would not be pressed; but it was shortly after insisted that the rules be signed by each employer, or a strike would take place. Such is the nature of this document, and the manner in which it is presented to the masters, that they cannot with any feeling of self-respect submit to it, nor can they agree to allow any irresponsible committee to dictate the manner in which their business shall be conducted.

It was afterwards thought that a deputation of masters and men might, by free discussion, bring about an amicable settlement; but, after three hours' talking, the matter remained as before.

In as brief a manner as possible we beg to draw attention to the rules of the operatives, leaving the public to judge on whom rests the onus of the present strike.

It will be observed that many things already the custom of the trade have been introduced, and we cannot conceive why we should be called upon to sign what has long been acceded. We look upon it as a blind to make the objectionable clauses less "odious."

The following are the rules in question:—

"Rule I. That the hours of labour commence on Monday morning at seven o'clock, and close at half-past five in the evening; and that the other five days be from six o'clock in the morning to half-past five in the evening, except Saturday, to close at four o'clock throughout the year."

In the memorial accompanying the rules the men say, —"Employed as we are at a laborious and unhealthy occupation, we have not hitherto had sufficient leisure to enable us to obtain proper mental culture, or healthy recreation; and are shut out on secular days from public parks, libraries, galleries of art, &c. . . . . Most of us have long distances to walk to and from our employment: consider, then, how unfitted the operative must be in the evenings alone for self-improvement, when his physical powers are nearly exhausted." We ask, will the hour required on Monday morning be conducive to the realisation of the desire to attend libraries, &c., in the *evening?* or are the men more unfit to resume their labours at six o'clock then—after a Sabbath-day's rest—than on other days?

As to closing at four o'clock on Saturdays, it was conceded to the men several years ago, and no attempt has been made to regain the hour then granted.

"II. That, during the winter months, namely, twelve weeks from the first Monday after the 16th of November, to commence work at daylight and close at dark; in no case to work later than half-past five in the evening.

III. That nine o'clock be starting time for three quarters of a day during the summer months, and half-past nine during the winter months; and one o'clock for half a day's work throughout the year.

IV. That one hour be allowed for dinner throughout the year, and half an hour for breakfast during the summer months."

These rules are the ordinary practice of the trade.

"V. That the summer rate of wages be 4s. 6d. per day, for forty weeks; and the winter wages be 4s. per day for the other twelve weeks in the year."

This request has been acceded to, as already mentioned.

"VI. That sub-contracting and piece-work be abolished."

If the workman cannot make as much or more by piece-work than his rate of wages, he need not enter into a contract; but why should the skilled and industrious be debarred the opportunity of earning as much as they can? Sub-letting is not generally resorted to, but surely a master and his men ought to be at liberty to make any bargain.

"VII. That overtime be not allowed, except in cases of emergency; and not to work more than two hours for a quarter of a day; and to be allowed time and half for all time worked after the first quarter, and double time for Sundays."

No one is required to work overtime except in cases of emergency: it is generally wished for by sensible men, in order to make up the time lost by bad weather, &c. Time and half is always allowed after the first quarter.

"VIII. In yards, or jobs, the nature or extent of which render the demand reasonable, sheds shall be erected. The society, in conjunction with the masters, to have a voice in directing, where a dispute exists, relative to the erection of sheds. Any employer not acting in accordance with this rule to pay half the time his men lose in consequence of wet weather."

The masters find it advantageous to erect sheds, and generally do so, as the works now on hand testify; but to require pay for half the time lost by bad weather, under any circumstances, is most unreasonable, while the arbitration demanded in case of dispute is one which no contractor would submit to.

"IX. Walking-time in the morning to be allowed to all jobs outside the Parliamentary boundary of Leeds, at the rate of three miles per hour; and any employer having work above three miles from the boundary, to pay 2s. per week for lodgings. In cases where lodgings are paid, to work the same hours as in the town, except Monday, when walking-time to be allowed as above. In cases where men are sent by railway, to have fare and time allowed going and returning."

Walking-time is allowed to men working outside the town, but to grant it because the job is "outside the boundary of Leeds," is absurd. Do men require walking-time from Leeds to Holbeck? or, if the borough is meant, would the men like to observe the rule, and begin work at six o'clock at Bramley?

"X. Where wages are paid on the Saturday, to commence paying at four o'clock every week; and the men working beyond the boundary to be paid on the jobs, or be allowed to leave work to reach their respective offices at four o'clock. In no case are wages to be paid at a public-house."

If wages *were not* paid punctually every week, there might be some reason for this rule. Some masters, out of a kindly feeling, pay their workmen when out of town, by the job; but to be compelled to do so, or forfeit the amount of work which might be done in the time calculated to reach the office (at a not over-quick pace), is just the way to lose the present boon.

It appears that the men who receive their wages on the Friday are to work full time: this is unjust.

"XI. That in all cases where disputes arise, a committee be called, consisting of an equal number of masters and men, to settle such disputes."

This rule would create more disputes than it could settle, and entail a vast amount of uncalled-for labour upon a "committee," besides interfering with the right of masters and men to arrange their own differences. We think *both* would sooner "agree to differ" and part rather than spend their time and patience in altercation with the "committee." It might do for some half-dozen of the "irresponsibles," especially if the pay was good: they would then have nothing to do but to walk about in broad cloth, trying to settle disputes, which it would be easy to multiply until even the former part of the 7th rule would require to be abolished, and the latter clause found very lucrative.

"XII. That these rules be equally binding on both masters and men; and, should any alteration be required, six months' notice shall be given by either party; such notice to expire between the 1st of May and the 1st of August next ensuing."

Here is a fair specimen of the selfishness which pervades the whole. The men dictate their own terms, and finish with the offer of redress, if found unbearable, but fix it at a time "between the 1st of May and the 1st of August," when it would be all but impossible for the masters to alter their position.

In conclusion, we are glad to find that there are men who have the wisdom to discern that the combination for the enforcement of the rules is unnecessary and unreasonable; that there are "other and more solid and practicable remedies for low wages than can ever be effected by a combination;" who have the moral courage to withstand the tyranny of the leaders of the strike. We only wish that others who have similar views had the same moral courage, and would dare to vindicate their right to dispose of their labour according to their own judgment; then would there be hope for a true bond of union between masters and men; then they would *never* allow one class to trample on the liberties and rights of another class; but would, both by precept and by example, defend their hallowed birthright—the freedom of labour.

Signed on behalf of the Leeds Branch of the West Riding Association of Master Builders,

John Wood, Chairman.
Wm. Longley.
Jabez Woolley.
Leeds, August 10th, 1860. David Boothman.

Bristol.—At the adjourned meeting of the Master Builders' Association (of Bristol), held on Wednesday afternoon, the following resolution was unanimously agreed to:—"That this meeting does not see any reason to depart from the resolution passed at the last meeting relative to the de-

mands made by the operative masons." The meeting was again adjourned for a week.

The demand, as we understand it, is 4s. 6d. a day instead of 4s., and two hours less labour in a week. The advance does not appear to be objected to so much as the proposed reduction in time. Moreover, some time ago, the "wallers" (less skilled hands), who had received less wages than the free-stone men, struck, and with the aid of the free-stone men obtained an advance, making all equal. These now strike again for the further advance.

THE SHORTCOMINGS OF ARCHITECTS.

Sir,—Believing that your pages are open to the opinions of all who may in a friendly spirit think proper to differ either from you or those whose cause you more especially advocate, I am induced to make a few remarks on this delicate subject. In doing so, I by no means intend to disparage that useful and intelligent class of architects who, consulting their employer's wants and means, devise and recommend such a building as suits his purpose, as well as becomes an ornament to the district where it is erected; but I find fault with another class altogether, and this is, perhaps, the one which considers itself the most versed in ancient as well as modern lore. I mean a no less eminent body than our present *church architects!* In making the bold complaint, I fear I am laying myself under a charge of something like treason, sedition, or sacrilege. Nevertheless, let the matter be judged fairly, not by prejudiced professional men, but by the all-important public, and we shall see how much we have to find fault with on this head.

Let us suppose one of the most common of all occurrences, the rebuilding or enlarging of a parish church, for which a reasonable sum is forthcoming. A committee undertakes the duties of arranging with an architect, and one of the highest standing is consulted on the job, and furnishes plans, which of themselves would grace the walls of any one's parlour. These delusive plans, for I can call them by no other name, are approved of, and the work either contracted for by competition, or, by the architect's desire, put into the hands of some competent builder, and the work done according to his instructions, to the very letter, we may say. Allowing all this to be done, the congregation assemble when it is opened, expecting to find a building adapted to the wants of the present generation; when, alas! the first visit convinces every one that the new edifice is little other than a counterpart of the old one—all the evils of the old one remaining without its benefits. In other words, the architect, in his zeal for antiquarian restorations, had forgot that people nowadays wore broad cloth, and such delicate fabrics as silk and muslin, instead of sheepskin jerkin, and home-spun linsey-woolsey petticoats, &c., and that no provision whatever was made for the heating of the building, but that the congregation would keep themselves warm by their admiration of the beautiful, such as our professional gentleman will have them believe the pulpit and altarpiece are. Unfortunately our present generation are mortals of a kind accessible to cold, if not to the fine arts, and a complaint is made that the new church ought to have been heated. Another still more serious complaint is made, that they do not hear the minister so well as in the old building; and many other faults of a similar kind are made.

Now, as a plain unprofessional looker-on, I do not set up myself to be a judge of what a church ought to be; but this I assert, that of all the public buildings adapted for a public purpose, an English church is in general the worst contrivance for the object it is intended for. When we enter a church, it is expected that we must take off our hats; but where are they to be put? Under a seat, perhaps, where they receive many kicks and knocks during the service. The rubric also informs us when to kneel, but the architect has provided no accommodation that way. We complain of not hearing one half of what the minister says; but we are told the design of the building is inimical to sound being clearly conveyed. And if it be hot weather, we ask why could not some of the windows be opened; but we are told to supply hinges or opening contrivances would mar the beauty of the design, and we must endure the close confined air. Whereas in winter, there being no permanent heating contrivance, an Arnott stove is stuck in the aisle, with its long iron tube of a chimney running up to the roof; otherwise I have seen an opening made for it by taking some of the glass out of an ornamental window, and putting it through there. How much the architect might be horrified by this I cannot say: one thing is certain, the churchwardens received credit from their parishioners for the comfort they afforded them, how much soever the self-complacent professional might find fault with the misappropriation.

Now, having taken a view of what architects are doing every day in our churches, let us look at what is done in another quarter. A body of Dissenters, by great perseverance, collect a sum of money to build a place of worship; but they do not go to a first-class architect, but consult a well-informed practical builder, and explain to him that they want a good comfortable building that will seat the greatest possible number of worshippers in the best manner, and at the least cost—warmth, ventilation, and the prospect of hearing the speaker distinctly, being all considered; and after due consultation this building is erected, and in every respect contrasts strongly with its more ambitious neighbour. In the chapel, the windows are to let the light in, and give ventilation: in the church, they are to obstruct both light and ventilation. A row of pegs very often surrounds the outer walls, on which hats hang in safety: this homely usefulness would horrify our High Church professional. A useful kneeling-board is also provided in the chapel; whereas the churchman is expected to hang forward on his seat, pressing his forehead against the back of the seat in front of him, until perchance the softened paint or varnish stick to it, and he has to endure a sort of penance to release himself again. And, finally, he quits the church with but a very imperfect notion of what the sermon was upon. The indistinctness in which the sound reached him made it impossible to catch it. Whereas, in the chapel, though containing many worshippers, every one hears distinctly what the minister says; and the shivering in winter, or stifling heat of summer, are alike rectified, much better in the cheaper building than in the more expensive one.

Now I believe there are hundreds who will confirm what I have here stated, that churches in general are not well adapted as places of worship; and, as an English churchman, I say it with regret; and certainly much of the blame lies in our architects, who as a class are more fettered by red tape, and a rigid adherence to certain forms, than any other class; and I feel sorry to see you, as the editor of a paper devoted to building, supporting them in what they call their prerogatives, for assuredly they often fail in accomplishing what the public expect of them. Most callings are the better off by being ventilated by admitting outside assistance, however derogatory it may seem to be, for a contracted action, like the breeding in and in of cattle, tends to debility: let us hope architects will take a lesson, and build us churches wherein we may worship our Maker with the same comfort we enjoy in our homes; and, if they be unable to do that in their highly ornamented buildings, why, I would advise, where the means allowed, to build a place expressly for worship, and have the fantastic church to look at, or for use on grand occasions: in this they might even have their much-vaunted precedent to guide them, for state-coaches and court-dresses are used in this manner, and why not churches.

A Looker-on.

Books Received.

The Uses of Animals in relation to the Industry of Man. By E. Lankester, M.D., F.R.S. Hardwicke, 192, Piccadilly.

Dr. Lankester delivered a course of lectures on this subject, at the South Kensington Museum, of the animal product and food collections of which he is superintendant; and the present little volume has been prepared from a shorthand report corrected by Dr. Lankester himself. The lectures are essentially extemporaneous and popular, and were designed rather to excite interest in the subject than to exhaust it. Nevertheless they are full of curious and useful information as to various matters, but particularly on leather, bone, silk, wool, soap, and waste.

We shall take a few passages at random, by way of specimen.

Here is an economical view of "shoddy," or new cloth made from the wool of old cloth torn to shreds.

"The cheap clothing of late years has depended upon the introduction of this shoddy; and, provided the price is not larger than gives the fair profit to the manufacturer, we cannot object to it, as it enables many to put on, at least once a week, a decent-looking coat, who otherwise would not have a cloth coat at all; and if the wear only answers to the price given, I do not think any one can find fault."

We recollect an anecdote in connection with shoddy, which shows to what an extent it must be made in some towns, and how universally it must be worn in such places. A gentleman who happened to have "a good coat upon his back," in traversing the streets of one of these towns, to his surprise found himself an object of marked and close attention amongst numerous girls who worked at the factories, and felt, no doubt, a little flattered thereby, till the scrutiny became rather too close, and too many pairs of eyes were exercised in it to continue at all pleasant; and at length he found, from their whispered *patois*, that the fact of having on his back a genuine broadcloth fabric was the sole attraction, as they had never seen such a thing in their lives before, although they had, doubtless, often heard of it.

"Passing on from shoddy to leather clippings, I will mention that a patent has been recently obtained for cutting up the clippings of leather, and introducing them into the soles of boots and shoes, rendering them easier to the wearer and quite as durable; thus saving new material."

This reminds us of an attempt, some years ago, by a correspondent, to respond to an idea of ours as to the possibility of producing gutta percha or india-rubber from bituminous or other substances, by chemical means. Our correspondent, misunderstanding our meaning, and having a laudable desire to put waste leather cuttings to use, had reduced some to shreds, and made up a sort of leather shoddy with it, by help of a bituminous cement; but it was quite unfit, in the state we saw it in, to form a substitute for leather. Doubtless, it may have suggested the patented invention, however, mentioned by Dr. Lankester.

The number of uses to which a dead horse is put is really surprising. The only part to which we shall here allude, however, is the tongue, respecting which there was some mystery, till Dr. Lankester incidentally suggested that it was probably sold for ox tongue. This a correspondent of a newspaper, which reported the doctor's lecture, declared to be a libel on horse-tongue, as it never was sold for anything so "low;" being "always sold as reindeer tongue!"

"Gather up the fragments that nothing may be lost" is a scriptural motto peculiarly suitable to many such uses as those to which waste substances are put; but it would scarcely form a decent covering to cloak such a purpose as this.

Miscellanea.

Metropolis Local Management Amendment Act.—Mr. Tite has withdrawn his bill, adding that he intends to bring in a similar bill next session.

Gas.—The Ashford Gas Company have unanimously resolved to reduce the price of their gas from 5s. 10d. to 5s. per 1,000 cubic feet.——At Abergavenny it has been arranged between the commissioners and the company that the latter are to supply all private consumers with good and sufficient gas, by meter, at a maximum rate not exceeding 6s. per 1,000 feet, such arrangement to remain in operation for three years. An extension of pipes through the Grofield district has also been resolved on.

St. Swithin Defied.—There is now before the Academy of Sciences at Paris, "a wonderful invention" of Mons. Helvetius Otto, of Leipsic, by which he promises to "insure fine weather." He erects a platform at a considerable height in the air, on which he places a "propeller," or huge bellows, worked by steam. With these bellows, which are "very powerful," he blows away the clouds as they gather; and, as rain comes from the clouds, it must necessarily follow that where clouds are not allowed to gather there can be no rain. He maintains that if a certain number of his "Rain Propellers," or "Pluvifuges," as he has named them, are placed at intervals over the city, he can provide for the inhabitants a continuance of fine weather, and a certain protection from sudden showers and muddy streets, so long the terror of fair pedestrians. The poor inhabitants of adjoining towns would be to be pitied. What would become of them? As for the Pluvifuge proprietors, their motto ought to be "*Après nous le déluge.*" Victims, however, as we in England have of late been to wet weather, still we cannot blame the Frenchman's "Pluvifuges," inasmuch as France itself has been in nearly the same predicament,—at least the northern parts of it.

Ruins of an Ancient City in the United States.—A discovery is alleged to have been recently made some ninety miles north-east of Fort Stanton, a long account of which has just appeared in the *Fort Smith* (Ark.) *Times*. The city, it is said, is quadrangular, and arranged with skill, many of the buildings on the outer line being pierced with loopholes. Several of the buildings are of vast size, and of massive blocks of dark granite rock, which could only have been brought to their present condition by a vast amount of labour. There are the ruins of three noble edifices, each presenting a front of 300 feet, made of ponderous blocks of stone, and the dilapidated walls are even now 35 feet high. There are no partitions in the area of the (middle) supposed temple, so that the area must have been vast; and there are also carvings in bas-relief and fresco work. The blocks of which these edifices are composed are cemented together by a species of mortar of a bituminous character, which has such tenacity that vast masses of wall have fallen down without the blocks being detached by the shock.

Terra-Voltaism for Submarine Telegraphs.—Mr. Septimus Beardmore, C.E., has written a pamphlet on this subject (Stanford, Charing-cross, publisher), in which he gives an account of some hopeful experiments made by him, between Cromer and Heligoland, through a line 300 miles in length, with a simple terro-voltaic apparatus, such as he seems convinced must ultimately be used for long submarine telegraphs, instead of the battery system heretofore in use. The new apparatus consists merely of a couple of earth plates, positive and negative, one at either extremity of the line, no other battery being used. By such means it is anticipated that all necessity for insulation of the wires, or at least dependance on perfect insulation, will be obviated, the electricity evolved by a single voltaic couple, while connected with the respective ends of the wire, having no tendency to escape to earth during transit. The chief difficulty relates to the question of intensity; as, by the single arrangement, increase of surface only affords increase of quantity, and not increase of intensity, as by the battery apparatus. The thickening of conducting wires appears to be a desideratum; and certainly, since the failure of the ponderous iron envelope of the Atlantic line, this would otherwise be an improvement. Mr. Beardmore seems to agree with us in thinking that the present line across the Atlantic is not useless,—at least on his terra-voltaic principle. Surely it will not be finally abandoned without such renewed experiments with it as we have suggested.

New Schools at Brixton.—The first stone of Christ Church National Schools, Brixton, has been laid by the Rev. McConnell Hussey, the Incumbent. The buildings comprise school-rooms for boys and girls, and master's residence. It is proposed to lay out about 1,700*l*. The architect is Mr. H. Currey, and the builder Mr. Wm. Downs. The ground was the gift of Lord Holland.

Traffic Returns.—The traffic returns of railways in the United Kingdom for the week ending August 4 amounted to 588,310*l*., and for the corresponding week of last year to 549,020*l*., showing an increase of 39,290*l*. The gross receipts of the eight railways having their termini in the metropolis amounted to 265,236*l*., and for the corresponding period of last year to 249,727*l*., showing an increase of 15,509*l*. The receipts on the other lines in the United Kingdom amounted to the sum of 323,074*l*., and for the corresponding week of last year to 299,293*l*., showing an increase of 23,781*l*.

The Doings at Guildford County Court.—The clearing of the court by Judge Blackburn, against which Sheriff Evelyn protested, arose, it appears, from that rampant evil, to which we have in other cases so often drawn attention, the bad construction of the court-house. "In this most inconvenient court," said the Lord Chief Justice, in his reprimand to the sheriff, "the noise from the street was found by my learned brother to be very much aggravated by that which proceeded from the lower part of the court. It did not arise from the disorderly conduct of the people assembled there; but, as no seats were provided for them, much movement naturally ensued, and a stone floor, as we understood, added to the disturbance. Moreover, the prisoners' bar intervened and separated the lower portion of the audience from the immediate supervision of the court. My learned brother found himself unable to hear the witnesses and prisoners; and from this motive, and this alone, —for the proper conduct of business—he directed the lower part of the court to be cleared. The necessity for that step arose from the defective construction and arrangement of this court. Your representation of the case goes forth to the public with a perversion of the truth, though not an intentional one, I believe, that the whole court was cleared. A portion only was cleared, the rest was occupied by the public, and they were freely admitted."

The Steam Plough.—The "iron horse" has not only "taken to the road" but to the cornfield; and seems quite ready, in this as well as in other directions, to send his fleshy prototype quietly and gently down into the lethean nirvana of "utter extinction," along with his respected conductor, Giles Chawbacon, whose "place" is about to be taken by the engineering John Gileses, who tend the iron horse. In full view of this imminent contingency,—and doubtless devoted to the interests of "No. 1,"—Mr. John Giles, of Cannon-street, City, has issued to the commercial public an address on "The Steam Plough, and its prospective Influence on the Ships, Colonies, and Commerce of Great Britain," in which, recommending the "steam plough" for use in Australia, he says;—"It is the present land system of the colonies, combined with the want of an efficient agricultural engine, that checks the activity of industry and commerce, and which has led the colonies, in many cases, to the adoption of a protective policy, they hoping by the taxing of British manufactures to provide an extended field for the employment of that industry shut out by legislation from its legitimate channel (agriculture). A steam plough will remove this tendency to a protective policy; will open up the fields of legitimate employment both for capital and industry, and there will be no need to create artificial ones by protective legislation; will result in abundant and cheap staple produce, and will subject its supply to the wholesome influence of free trade in production as well as in distribution. The steam plough, then, is a commercial question; and, unless the commercial community make some effort to give it a practical solution, it will never be effected by the local trade societies which now have it in hand. In conclusion, I beg to call your attention to the accompanying advertisement, and to solicit your interest on behalf of this question, and the endeavour to give it a commercial as well as an agricultural character." The advertisement referred to, of course, relates (and quite fairly, too) to "John Giles's steam horses" and "free trade in agriculture." These horses, he says, are also suited for road transport. Their efficiency, he adds, is based on a newly-discovered principle in locomotive mechanics, and their range of speed, as ploughs, is one to six miles an hour.

Copper.—A reduction of one halfpenny per lb. in the price of copper took place on Tuesday, making the wholesale price of tough cake and ingot 98*l*. per ton; best selected, 101*l*. per ton. The price of rolled brass, brass tubes, and brass wire has been generally reduced also one halfpenny per lb. in consequence.—*Birmingham Daily Post*.

Paper and a Dye.—Mr. John David Barry, of Thurlow-square, Brompton, announces the discovery of a new material for making paper, by a patented process; and he also states that "the pulp," used for the manufacture of this paper, is produced from the residuum of the plant, after chemical treatment for the production of a colouring matter, susceptible of crystallization, and applicable to the dyeing of silk, wool, and all similar animal substances.

Removal of the East-India Board.—The work of removing from the old India House to the Victoria Hotel, in Westminster, will commence on the 1st of September. The rent to be paid for the portion of the hotel to be occupied by the various offices is 6,000*l*., in addition to one-half of the rates and taxes. Nothing is yet known as to what is intended with respect to the Museum. The furniture for the new offices at the hotel, with the exception of the carpets, which are to be provided by the Company, will be supplied from the present India House. The cost of the removal will be 6,000*l*.

Metropolitan Board of Works.—On the 17th Mr. Lowman Taylor moved that three committees be formed, consisting of fifteen in each, of the members of the Board, viz., "The Finance Committee," "Works and Improvements Committee," "Building Act and General Purposes Committee" (the Main Drainage Committee still continuing a committee of the whole Board). The motion, after a long discussion, was agreed to. Mr. Aird's tender was received for the execution of the works for the southern *low*-level sewer through the Surrey Consumers' Gas Company's premises at Deptford, at a schedule of prices, or at a lump sum, and to take such steps as may be necessary in order to re-commence the works forthwith.

The Gateshead Mechanics' Institute and Mr. Clephan, lately Editor of the "Gateshead Observer."—The Gateshead Mechanics' Institute has unanimously adopted resolutions strongly expressive of their esteem for and many obligations to Mr. Clephan, who is one of their vice-presidents, and their regret to learn that he is in ill-health and about to quit Gateshead, after resigning the editorship of the *Gateshead Observer*; and also intimating their intention to subscribe for a testimonial which is about to be presented to him. The *Gateshead Observer* has long been celebrated for the excellent manner in which Mr. Clephan has conducted it: indeed, besides its never wanting stores of the freshest and most useful intelligence, to which we, as well as others, have for many years had constant recourse; it was often more like a sparkling repertory of wit and humour than an ordinary newspaper; and we cannot help expressing our regret to hear of the ill-health of its very able late conductor.

Honour to an English Engineer in Brazil. The Emperor of the Brazils has conferred upon Mr. W. G. Ginty, formerly of Manchester, the rank of a knight or Chevalier of the Imperial Order of the Rose, inclosing along with the notification of this honour a jewelled box containing the insignia of the order, to be worn on the breast on public occasions. His Majesty has conferred this honour in acknowledgment of Mr. Ginty's general services, and for the able manner in which he has discharged the duties of Engineer-in-Chief of the new city canal and other important public works of Rio de Janeiro, of which Mr. Ginty has had the superintendence. Mr. Ginty has, during the last six years, been the managing engineer and director of the Rio gas works, and has raised the condition of that enterprise so that a dividend of 18 per cent. per annum is being made on the amount of capital, in addition to the 10 per cent. per annum paid into the reserve fund.

The Prayer of a Taunton Bell.—Mr. Editor, —Knowing from experience that you take a great interest in matters connected with the "Bell family," you would be conferring a kindness if you or any of your correspondents could prescribe a remedy for my complaint, and to save me from certain death. I am pronounced to be *cracked*, and as I am inclined to believe there is some truth in the statement, I must admit that I am not in a proper state to resume my place as leader to that noble peal of "Old Martin Bells;" but still my motto is "Live and let live."

"Tenor Tauntonian."

The County Surveyor for Tipperary.—We understand that Mr. John L. Worrall, C.E., has been appointed county surveyor of the South Riding of Tipperary, in the room of Mr. William Henry Deane, C.E., nominated by his Excellency to the county surveyorship of the eastern division of Tyrone.

New Military Hospital at Woolwich.—Tenders will be received at the Royal Engineer Office, Woolwich, in September next, for the immediate erection of the new military hospital, on a site of Government land for the use of the Royal Artillery, it being intended to convert the present Ordnance Hospital into barrack quarters.

Death of Mr. Charles May.—With regret we have to record the demise of Mr. Charles May, C.E., of Great George-street. Mr. May was well known in the profession he had embraced. He was for several years a partner in the Orwell Works at Ipswich, then carried on by Messrs. Ransome and May. He was a Fellow of the Royal and of the Royal Astronomical Societies.

The Erecting of Schools.—It appears from a Parliamentary return that the sum expended in erecting schools since the year 1853, under the minutes of the Privy Council of Education, is 1,137,112. Of this large sum, 632,398*l*. was supplied by local rates, 79,735*l*. by non-local subscriptions, and 424,979*l*. was furnished by Parliamentary grants.

Proposed People's Park at Gloucester.—The town council of Gloucester have resolved, by a majority of twelve to ten, to accept the offer of the Spa grounds, to be devoted, with sixteen acres of corporation ground, to a people's park, provided the incidental expenses, estimated at about 1,000*l*., be raised by public subscription. About 700*l*. have been promised, but the desirable improvement will in all probability now fall through in consequence of a hitch with the Spa proprietors as to the offer not having been accepted within six months.

Improvements at the General Post-office. A glass flooring has been laid over the Circulation Department, under the superintendence of Mr. Gould, the clerk of the works, and Mr. Williams, the surveyor of the department of the Board of Works. The panel flooring (1¼ inch thick), which is intended to give light from this office to the lower apartments, has been protected by iron bars, with a network, to prevent any of the officers from falling through to the adjacent floor, or being otherwise exposed to danger. The roof of the "newspaper office" is being composed of glass.

The Co-operative New Mill at Rochdale.—The large new mill, erected at a cost of 34,000*l*., by the co-operatives of Rochdale, was recently the scene of an event of some interest to that body. The two new engines erected by the Messrs. Petrie, of Rochdale, at a cost of 2,400*l*., giving a nominal power of 120 horses, were for the first time set in motion, and one was named the "Co-operator," the other "Perseverance." The large mill is fast being filled with first-class machinery, and it is supposed that in a month or six weeks all will be in working order, when work for about 300 hands will be found. This body will now have embarked about 59,000*l*. in their undertaking.

Establishment for Convalescent Workwomen at Vesinet.—The admission of the public, on Wednesday in last week, for the first time, to a view of the establishment founded by the French Empress at Vesinet, for the convalescent workwomen discharged from the hospitals, has given publicity to this foundation. "The benevolence of the undertaking," says the Paris correspondent of the *Star*, "is evident throughout the arrangements, which are all on the most liberal scale, and even carried out with a degree of elegance which cannot fail to be appreciated as the graceful homage of a woman to the artistic sensibilities of women."

M. Hittorff on Sir Charles Barry.—The Five Academies at Paris held their annual sitting on Tuesday in last week, and many of the most distinguished celebrities in art, science, and literature, were gathered in the circular theatre of the Palais Mazarin. M. Hittorff, the architect, chose for the subject of his reading a notice on the life and works of the late Sir Charles Barry. English excellence is beginning to be appreciated by French artists at length; and as the individual perseverance of the Anglo-Saxon character is being revealed, a new field of art is opened to their view. The origin of Sir Charles Barry, contrasted with his end and burial, amongst the kings and most illustrious men of his country, was warmly dwelt upon, and elicited great applause.

Bow Steeple.—The statement made in some of the newspapers, that Wren's steeple of St. Mary-le-Bow was injured by lightning, appears, we are glad to say, to be incorrect.

The Timber Trade of Bristol.—Messrs. F. K. Barnes & Sons, in their timber circular for August, say,—"The importation during the month of July was considerable, but not anything near what it was during the last few previous years. The falling off is entirely in New Brunswick goods, and particularly in spruce deals: only 36,420 pieces were imported, against 288,441, the average of the last three years, while the tonnage from the same ports is only 2,630 tons, against 11,328 for the same period. The arrivals for the past month have been 24 vessels, 13,430 tons register (against 24 vessels, 14,526 tons for the corresponding month last year), and consist of 12 from Quebec, 8,028 tons; 4 from New Brunswick, 1,292 tons; 2 from Memel, 626 tons; 3 from St. Petersburg, 2,934 tons; 3 from Norway and Sweden, 550 tons."

"The London Review."—The public are under so many literary obligations (for pleasure and profit received) to the poetical and political pen of Dr. Charles Mackay, the excellent editor of this new and cheap weekly paper, that we are anxious to do *our* best, as others are doing, not only to promote its interests ourselves, but to afford the public, as far as the *Builder's* very miscellaneous circulation extends, an opportunity of paying up a small weekly instalment towards the debt they owe Charles Mackay, by taking in his new paper regularly, as one of the best exponents "of politics, literature, art, and society" attainable at any price, much less at 3d. only, which is the price of the new *Review*. The current number (for Saturday, 18th August), like all the six which have already preceded it, is a varied and good one. One paper in it treats of the Thames embankment. The social and commercial leader is on the momentous subject of food and money prospects; and there are various other articles on fresh and interesting topics, besides a little poetry, town and table talk, sketches in Parliament, review of political and other questions of the day, book reviews, &c. &c.; the whole forming an exceedingly cheap and good weekly paper, interesting and useful to all classes.

The Strike at Coventry.—Work, it appears, has been partially resumed, although there is said to be, "on the whole, an absence of that cordial good will which should exist between employers and employed;" and the workmen are senselessly rejoicing in the damage they have done to the capital by means of which alone they can obtain employment. The *Siècle*, in allusion to some of the proceedings, as reported in the *Coventry Herald*, justly remarks, that instead of denouncing "the atrocious treaty of commerce," and the "want of patriotism" in those who purchase French ribbons, the weavers ought to have been made sensible that "their looms were behind the age, and required improvements." It is only in the perfection of machinery, adds the *Siècle*, that the workmen will find an end to their miseries: why, then, should they not be frankly spoken to, and the means of procuring the best and most perfect pointed out? The silk-weavers in Sudbury, Braintree, Coggeshall, and other places, we regret to learn, threaten to strike, in consequence of an intended reduction of wages.

Electro-Telegraphic Progress.—The laying of more deep-sea cables after the failure of the Atlantic one, and before something was done to improve the plan and construction of such cables, has, as we fully anticipated and pointed out, not only been followed by repeated further failures, the last of which are the Red Sea Telegraph, the Maltese cables *via* Sardinia and Corfu, and the Channel Islands one; but has completely checked, if not finally destroyed, all chance of the laying of more of such lines, at least for some time to come. Can nothing be done to obviate so undesirable a result? The Government ought certainly to appoint a scientific commission, with power to experiment as well as to examine those acquainted with the subject, and those who pretend to the invention or possession of improved methods. As for those practical men who persisted in the formation of cable after cable after receiving such a warning as that of the Atlantic failure, their evidence is clearly out of court. Both gutta percha and iron, as we anticipated, are in disfavour; and the recourse we advised to renewed experiments with india-rubber as an insulator appears to be likely to be justified by the result of the experiments already made. The non-insulating or terra-voltaic system should also be experimented on; and, indeed, there is much to do before another deep-sea line is laid.

Bridge-street, Westminster.—In answer to Sir J. Shelley, Mr. Cowper said it was not likely that the houses on the south side of Bridge-street would be purchased for two or three years. It would then be for the House to determine what should be done with the site.

Magnitude of the Railway Interest.—Nothing, says the *Times*, can be more impressive than the magnitude of these concerns, if carefully contemplated. They probably represent at this moment at least 350,000,000*l.* of money actually invested. There are but 380,000,000*l.* in consols. Last week the chairman of a company, while performing the grateful task of announcing a large increase of traffic, felt bound to explain that a small fraction of it—some 6,000*l.* or 7,000*l.*—was accidental. The fact was that this is leap-year, and the odd day in February had added these four handsome figures to the receipts. One per cent. more or less in a dividend means comfort or pressure in thousands of households: a rise or fall in shares decides the market value of millions of property. Take, again, the people employed on the various lines. It is a new profession, and a comprehensive one too. It has a place for every class, for marquises and earls, for country gentlemen, for professional men, for engineers, for bookkeepers, cashiers, ticket-takers, porters, constables, and labourers. The North-Western pays its lawyers (unluckily for it) 30,000*l.* a year, and took over its counters last week upwards of 13,000*l.* a day.

The Alpine Tunnelling at Mont Cenis.—The following particulars, from a review of the preliminaries regarding the process of tunnelling now in progress at Mont Cenis, we condense from the *Engineer's Journal* of Calcutta. We have before given some of these details, but it is now several years since, and the works have been for some time in actual and successful progress. The tunnel under Mont Cenis is, without exception, the most gigantic individual work that railways have given rise to. It is about seven miles and a half long, and as the depth of the tunnel is about 2,600 feet below the surface of the mountains, it is impossible to make use of even one shaft throughout the whole length. But a tunnel of seven miles and a half, through rock, and without a shaft, according to the means heretofore used for the excavation of tunnels, would be a task, the completion of which one generation would scarcely see. The longest tunnel yet completed on any railway is not quite three miles long; and that, with the advantage of many shafts, took nearly five years to complete. How long would it take, then, to complete one of twice and a half the length, and attackable only at the ends? Compressed air constitutes a motive power which serves to drive the tools into the rock, and to open out holes for mining by gunpowder. A column of water, of 18 inches in diameter, gives an oscillation about every twenty seconds, and the power it engenders amounts to several horse power. As there happens to be, near Mont Cenis, and at each extremity of the tunnel, considerable waterfalls, this hydro-pneumatic machine is particularly applicable to the tunnel in question. The excavation of this tunnel, through the solid rock, is composed of several different successive operations, which may be resolved into three principles;—to break up the rock; to remove the blocks and broken pieces; and to cut the excavation out to the exact profile of the tunnel. The use of gunpowder accelerates greatly the breaking up of the rock, but in no way contributes to the removal of the pieces. It seems to be agreed that the first operation, of breaking up the rock, will be greatly expedited by the use of the mechanical appliances of Colladon, Bartlett, Grandis, Grattone, and Sommeiller. The tunnel is considered certain of being completed in about seven years, at a cost of something under 60*l.* sterling the yard forward of double line. This figure is very low, and many of our tunnels at home, not a quarter the length, have cost nearly double. The commencement of the works of this gigantic tunnel took place on the 1st of September, 1857. With great pomp and solemnity, the king of Sardinia, the prince Napoleon, and a vast number of distinguished persons, were present to witness the first explosion, which was made by means of electricity. The progress forward at each end seems to be about 10 feet a day, or 20 feet altogether. This gives upwards of a mile a year; and, if that rate be continued, the promised time of completion will be kept. The quantity of air used in the twenty-four hours amounts to 2,792,600 cubic feet; which is, however, compressed to one-sixth of that volume as it is used at a pressure of six atmospheres. The waterfalls are found quite enough to produce this effect.

The Ragged School Movement in Egypt.—The London correspondent of the *Scottish Guardian* says:—"To show how London example and influence act, I may mention that there is now a ragged school about to be established at Cairo, in Egypt, for Moslem children.

Proposed New Street from Coventry-street.—A plan is under consideration for a new street commencing from Coventry-street, passing south of Leicester-square, and in a south-east direction, and continuing *along* Orange-street at the back of the National Gallery, and in a line with King William-street. The plan has the support of the parishes of St. James and St. Martin. Funds to carry it out are in hand.

The Drinking-Fountain Movement. — At Aldershott, a public drinking-fountain has been erected by Major-General A. J. Lawrence, C.B. It is placed at the west end of the East-Block Permanent Barracks. The design was by Mr. Pepper, of Brighton. Bas-reliefs, dolphins, &c., ornament the sculpture.——At Sheffield a fountain, in the Italian style, has just been erected by public subscription, and, in great part, by gratuitous production. It includes, besides the fountain proper, a cattle trough, a wayfarer's seat, a barometer and thermometer, and a lamp surmounting the whole. The pedestal bears a medallion of the Sheffield poet and publicist, James Montgomery, the gift of the council of the local School of Art.

Malvern.—Considerable additions are being made to Townshend House, Great Malvern, for Dr. Grindrod, under the superintendence of Mr. E. C. Alflatt, architect, of Malvern Link. The works now in progress are a new wing, containing twenty-two additional rooms, with large dining-room (40 feet by 31 feet, 16 feet high); hall, staircase, observatory tower, finishing with a lead flat, piers, and open balustrade, the whole forming part of a plan involving an outlay of many thousand pounds. The contractor for the works is Mr. W. Nott, of Malvern Link. On the 27th ult., the roof of the new wing having been completed, through the liberality of Dr. Grindrod the workmen, to the number of eighty-five, were invited to a substantial dinner, to which they did justice. After dinner the grounds were thrown open, and the band of the Malvern-hill Volunteer Rifles (11th Worcestershire), were in attendance, and played a selection of music. In the evening, the workmen, with their wives, who had been invited to join them, to the number of 150, sat down to tea, after which the Rev. G. Fisk (the vicar of Malvern), with Dr. Grindrod, addressed the meeting at some length, and the vicar, at the request of Dr. Grindrod, presented to the architect a case of methematical drawing instruments (by Archbutt, of London), in testimony of his satisfaction. A Bible and a waterproof coat were presented to Mr. Freherne, the foreman.

TENDERS

For alterations and additions to National Schools Sutton, Surrey; Mr. Richard Gover, architect:—

Ware	£127 0 0
Foster	105 0 0
Cuff (accepted)	103 0 0

For alterations and additions to Camilla Lodge, Sutton, Surrey; Mr. Richard Gover, architect:—

Glenn	£790 0 0
Foster	738 0 0

For Villa, at Sydenham; Mr. Richard Gover, architect:—

Humphries & Ludford (accepted)	£1,600

For enlargement of All Saints' Church, Norwood; Mr. Nash, architect —

Dove, Brothers	£3,057 0 0
I'Anson	2,944 0 0
Ashby & Son	2,865 0 0
Ashby & Horner	2,830 0 0
Nicholson	2,800 0 0
Jackson & Shaw	2,800 0 0
Deards	2,750 0 0
Piper	2,700 0 0
Myers	2,700 0 0

For alterations to Warehouses, 26 and 26½, Milk-street, City; Mr. William Nunn, architect:—

Larke & Son	£3,245 0 0
Gadsby	2,798 0 0
Todd	2,712 0 0
Brass	2,700 0 0
Turner	2,580 0 0
Day	2,550 0 0
Wills	2,493 0 0

For the enlargement of St. John's Church, Penge; Mr. Edwin Nash, architect:—

Rudkin, jun.	£1,650 10 0
Warne	1,525 0 0
Hollidge (accepted)	1,390 0 0

For Works in the formation of Cemetery, Aldershott; Mr. T. Goodchild, architect, Guildford:—

	Two Chapels, Lodge, Dead-house, and Boundary Walls.	Laying out and Draining.
Martin	£1,980	
Swayne (accepted)	1,200	£180